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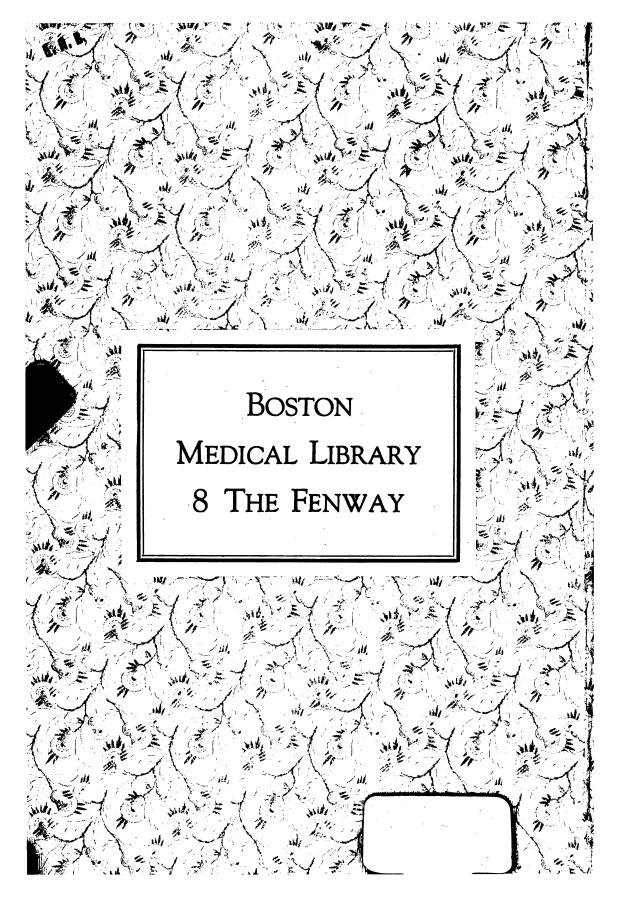
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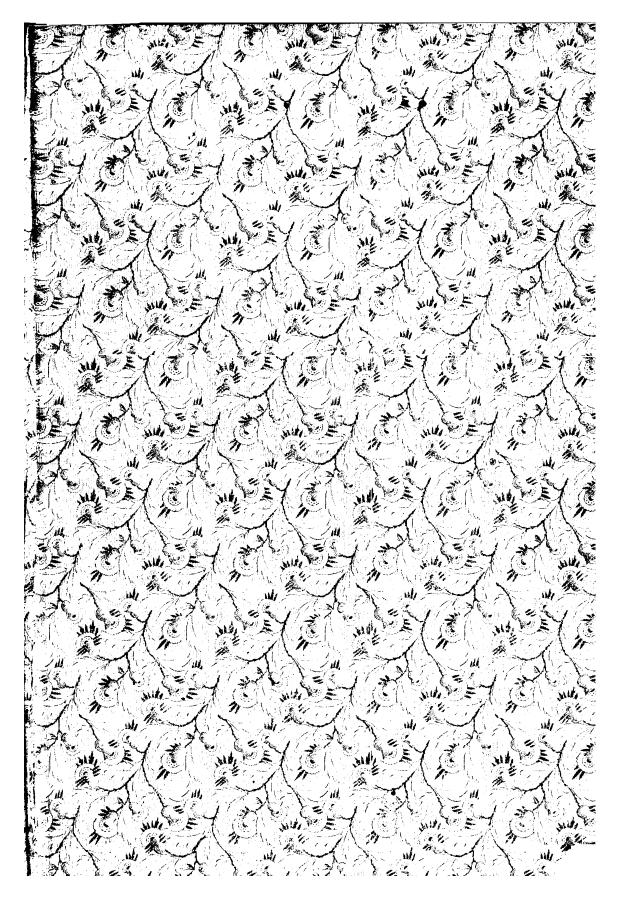
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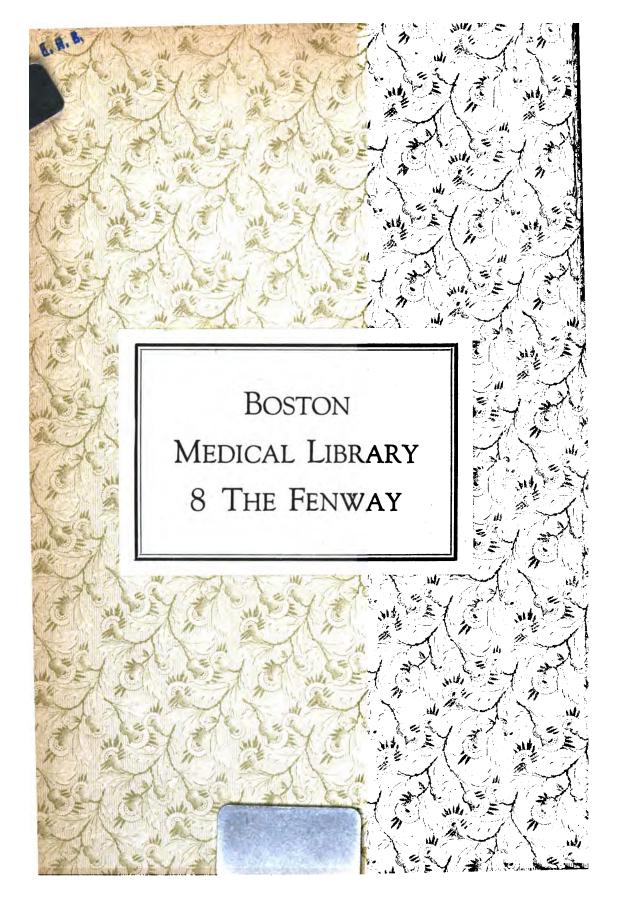
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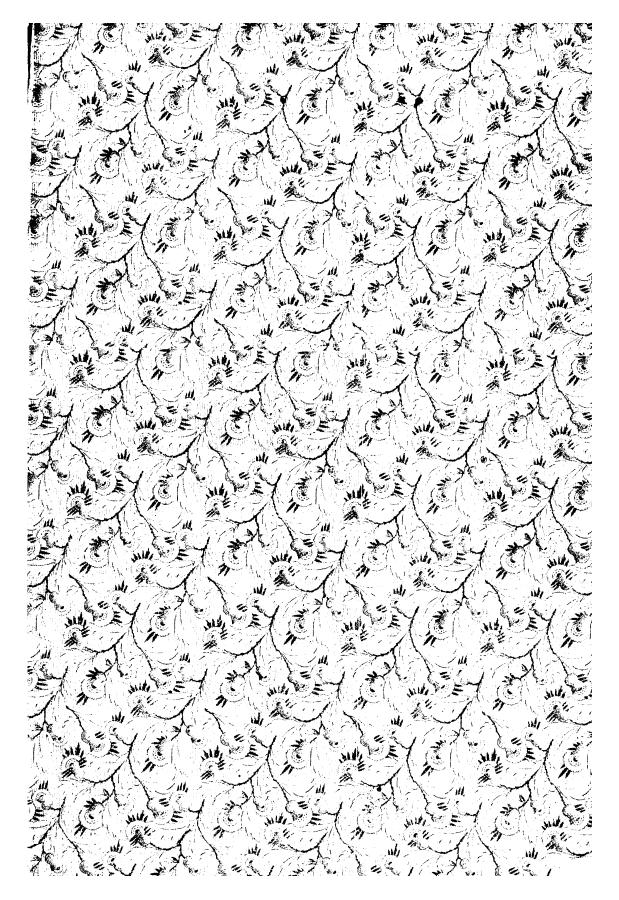
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PREFACE.

In the following pages the editors have tried to give the most essential point or points from each of a large proportion of the journal articles of the year which have been of interest to the worker in the departments of the nose, throat and ear. That the work would admit of many improvements and could well be more complete they are as well aware as the most critical of their readers. However, as an epitome of much of the best literature of the year put into a volume convenient for reference they are willing to submit it to the medical public, trusting that with the experience gained in the preparation of this they may be able to offer a very much more complete and valuable book for the next issue.

We desire here to acknowledge our great indebtedness to the very excellent abstract departments of the Laryngo-scope; the Journal of Laryngology, Rhinology and Otology; the Annals of Otology, Rhinology and Laryngology; the Journal of the American Medical Association; and the Philadelphia Medical Journal. While endeavoring to abstract from the original articles as far as possible, yet in many instances the work done in the above journals has been made use of. In the references given, the reader, as a matter of convenience, is usually referred to the original source of the article, even though the item has been derived from one of the abstracts alluded to.

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THE NOSE AND THROAT.

The literature of the year on the subject of the nose and throat has been, as usual, increasingly voluminous, this being true not only in regard to journal articles, but also as to textbooks and systematic works. Three complete works and one manual, besides a number of monographs, have appeared in the English language alone. Of these the fifth edition of Lennox Browne's "The Throat and Nose," which is virtually a new book, easily takes the first place, representing, as it does, the results of the long experience of an indefatigable worker, both as a clinician and as a writer.

D. B. Kyle, who has been favorably known as an original worker through his journal articles, has presented a treatise on "The Diseases of the Nose and Throat," which has at once taken a high place among the authorities on this subject.

That portion of the "American Text Book of Diseases of the Eye, Ear, Nose and Throat" which is devoted to the latter three subjects has met with a very favorable reception (as, indeed, has also the entire work), and is to be issued in a separate volume.

- C. G. Coakley's "A Manual of Diseases of the Nose and Throat" is intended as a companion volume to Bacon's "Manual on the Ear," and is adapted more especially to the needs of the post-graduate and general practitioner. The subject is brought down to date and well presented.
- St. Clair Thomson has placed the profession under obligations by his exhaustive monograph, "The Cerebro-spinal Fluid; Its Spontaneous Escape from the Nose, with Ob-

servations on Its Composition and Function in the Human Subject."

S. S. Bishop's book on "The Ear, Nose and Throat" came out enlarged and improved in a second edition and continues popular.

In the German have appeared E. P. Friedrich's "Rhinologie, Laryngologie und Otologie in Ihrer Bedeutung fuer die Allgemeine Medizin," and a second edition, enlarged, of A. Rosenberg's "Die Krankheiten des Mundhoehles, des Rachens und des Kehlkopfes."

The principal monograph of the year has been M. Hajek's "Pathologie und Therapie der Nebenhoehlen der Nase." The author presents the subject very exhaustively in a work of over three hundred octavo pages, largely from his own investigations, although previous writings on the subject are freely referred to and quoted.

In addition to these separate works the subject has received consideration in the various Systems of Practice and Year Books of the year. Taken as a whole, there has been more literature in permanent form on the nose and throat than in any previous year.

NOSE.

The tendency in intranasal work is showing a very evident return to more conservative methods of treatment in ordinary cases.

Levy (136, '98) has rendered excellent service by giving an exhaustive report on the serious results of intranasal operations. He cites two deaths from such operations that fell under his own observation and collates many more from literature. While the number of deaths is very few indeed for the immense number of such operations done, yet they are enough to show that no one should operate on the nose or naso-pharynx without a full sense of the serious results which may follow. It seems generally agreed that the source of infection in intranasal operations is the vestibule, and some suggest that the nose be cleansed from behind instead of in front after operations.

H. H. Curtis (I, Jan.) calls attention to the bad results from the use of the electro-cautery in the nose, particularly from its use on the septum, citing instances of perforations. These artificial perforations are usually the cause of much more discomfort than congenital ones, the latter rarely being complained of. C. also calls attention to cases of fatal meningitis reported from the use of the cautery on the middle turbinal. Considering the other means at hand for remedying defects of the cartilaginous septum he very properly concludes that the use of the cautery on this part is unjustifiable. In regard to its use on the turbinates he declares that he is through with it, except to break down adventitious

tissue at the inner border of the vestibule. In the discussion of the paper (which was read before the Sec. of Laryngol. and Rhinol., N. Y. Acad. of Med.) the general opinion seemed to be that the electro-cautery should not be used on the septum except for the reduction of very small excrescenses and at a low heat. Great difference of opinion was expressed in regard to the use of the electro-cautery on the inferior turbinates, some regarding it as wholly unjustifiable, while others of equal experience thought it the best method known at present for the reduction of hypertrophy and intumescence of these bodies. [The truth seems as usual to lie between the extremes. The galvano-cautery is a powerful agent, and like all such may be at least as potent for harm as for good. In the hands of one who fully appreciates its power, and the delicacy of the nasal structures with which he deals, the galvano-cautery is probably as useful and as little liable to injure as any other destructive agent which may be used. That it is an ideal method of curing intumescent rhinitis cannot be claimed, but it is as ideal as any other destructive method in use. Submucous puncture is a conservative treatment and yet meets the usual indications.]

Edema of Nasal Mucous Membrane.—Under this title H. Gradle (I, July) describes the only three cases of the disease which he has seen in his extended experience. While, as he says, edema of one or two parts of the nasal mucous membrane is not uncommon, yet the cases in which the edema involves the entire mucous membrane of the nose and constitutes the entire disease are very rare. In each of his cases the disease developed after an acute inflammatory attack. There was no suppuration. The mucous surfaces were in complete contact at least anteriorly. The mucous membrane was pale, grayish pink, distinctly swollen and soggy over the septum as well as over the turbinals and external wall. The mucous membrane was found hyper-

trophied after reduction by cocaine. The occlusion was constant. Dilatation with pledgets of cotton moistened with cocaine seemed to give the most relief and proved fairly curative when continued for some weeks, although many cleansing and astringent agents were used. In two of the cases the snare was resorted to for the hypertrophy remaining after all possible effect from the cocaine and pressure had been gained. Case 3 was only troubled during pregnancy.

Under the title *rhinoedema* H. H. Curtis (6, Dec. 16) discusses a class of cases of the same nature as those described by Gradle. He considers the condition a true edema, usually occurring in neurotic women and men of sedentary habits and sometimes in youths of fifteen to nineteen. He gets no contraction from the use of cocaine. The local conditions greatly resemble those of hay fever, but the tissues are more spongy and pale, with a bluish tint. The distress experienced by the sufferer is very much greater than in hay fever, causing at times absolute despair because of the total inability to breathe through the nose. The causes are various, usually being pressure from some new growth or thickening in the superior meatus.

For treatment Curtis prescribes regular gymnasium exercises, long walks in the open air, and the use of the rectal sitz douche with the nozzle in the center of the cushion, the patient washing the entire colon morning and night with four quarts of water containing a teaspoonful of sea salt and bicarbonate of soda. By these means and the use of strychnia and digitalis the mucous membrane is put into condition to stand treatment with monochloracetic acid without danger of sloughing. C. considers the cauterization of the nose in the early stage as extremely hazardous.

Nasal Obstruction.—Kuyk (1, Mar.), in a well-written paper, gives several cases illustrating the disturbing

effect on the mind of nasal obstruction in adults, with cure by operation. L. M. Crichton (45, Dec., '98) gives the history of four cases in which the removal of hypertrophy of the middle and inferior turbinate bodies and cartilaginous thickenings of the septum resulted in the cure of asthma from which the patients suffered. J. J. Bowen (26, Jan.) thinks that convulsion with a fatal attack of laryngismus stridulus may result from nasal obstruction in children, the tongue cleaving to the roof of the mouth and rapid cvanosis causing these results. Lermoyez (82, Jan. 29) reports the case of a girl with constant nasal obstruction since childhood by deformity of the turbinated bones. In spite of free nasal passage obtained by ablation of the obstruction, nasal respiration continued impossible, the patient becoming cyanosed and true asphyxia ensuing on closing the mouth. The patient was hysteric. During the day respiration was only by the mouth, but during the night in sleeping the mouth was closed and there was easy nasal respiration.

Synechiae.—Collinet (II, Dec., '98) points out as causes of nasal synechiæ, in addition to the frequent one of nasal operations, diphtheria, scarlet fever, measles, chronic and acute rhinitis, while many cases are congenital. In a discussion before the London Laryng. Soc. (2, May), participated in by Semon, Spicer, Spencer, Hall, Browne, and others, the difficulty of preventing nasal adhesions after operative treatment when they tend to form was extensively discussed. In some cases even large removal of tissue failed to relieve the tendency to adhesion. [The method of using a thin sheet of celluloid, mentioned by one or two of the speakers, has been found very satisfactory by the Editor.]

Ocular Symptoms and Nasal Disease.—E. Winckler (abst. 1, Apr.) goes very thoroughly into the connection between nasal and ocular disease. Such diseases as hypertrophy, polypus, etc., he considers as influencing

the eye through the circulation of blood and lymph, through continuity of connective tissue, and through nervous connections. In the case of nasal swellings with ocular complications W. says that the galvano-cautery should be entirely avoided and advises that cutting be done instead. W. regards the ethmoid cells, on account of their location, as a sort of center of distribution for most of the purulent infections.

Nasal Vertigo.—Lacroix (81, Nos. 9 and 10, '98) narrates a case in which the removal of three small polypi from the right middle meatus of a woman aged 38 relieved vertigo of more than a year's duration. The patient knew nothing of any nasal trouble, but consulted him on account of a trivial throat affection. She was surprised to find the vertigo gone after the operation and reported the circumstances to the operator one week later, that being the first she had spoken to him of the giddiness.

Siethoff (2, Mar.) reports nineteen cases of what he considered *Meniere's Disease*, cured by intranasal treatment. In his cases it was always irritation of some definite part of the middle turbinate which caused the symptoms.

Doubt was cast on the diagnosis by other members of the society (Netherlands Laryng., Rhin. and Otol. Soc.) before which the paper was read.

O. J. Stein (17, Jan. 7), in a well-written paper on the subject of nasal vertigo, gives the history of a case in which removal of a greatly hypertrophied middle turbinate relieved completely a case of vertigo of several months' duration.

Nasal Polypi.—J. Wright (1, Apr.) in an article on the etiology of nasal polypi concludes that "edematous infiltration of the nasal mucosa either sessile or in the form of polypi may result: 1. From mechanical obstruction to the venous return by the products of inflammation in the mucosa or in the underlying bone. 2. From the vaso-motor phe-

nomena accompanying chronic inflammation. 3. From vaso-motor phenomena present in neuroses, which may give rise to hay fever and bronchial asthma.

W. A. Wells (46, Dec., '98) reports a case of polyp and antral empyema in a man aged 44 who had for ten years suffered from epileptic attacks on an average once a week. Removal of the polyp and opening the antrum relieved the symptoms to such an extent that the patient only had one epileptic seizure in two months, whereas the longest previous interval had been two weeks.

Nasal Sarcoma.—In a discussion before the Laryng. and Rhinol, section of the N. Y. Acad. of Med., the opinion was generally expressed that sarcoma of the septum was very generally curable by early operation, such not being the case with the other parts of the nose. H. V. Wurdemann (I, Oct.) reports a case of sarcoma of the nasal passages (not of the septum) in which he raises the question as to whether it may not have arisen from the rough removal of polypi, benign being transformed into malignant growth by trauma. After thorough removal, recurrence had not taken place after eight years. The patient was a woman aged 47 years. A. R. Baker (1, Oct.) details a case of adeno-sarcoma in a woman aged 49 years involving the cartilaginous septum. tion of the growth removed was pronounced on microscopical examination to be nonmalignant adenoma. growth was then removed. Two years later recurrence began and the tumor grew rapidly, involving the bony septum A specimen now removed was pronounced to be true adeno-sarcoma. A radical operation was done, removing There was no deformity and healing was the entire septum. more rapid than after the first operation. There was no recurrence fourteen months afterward. Baker makes the report "as a slight contribution to the mooted question as to whether a benign adenomatous tumor ever becomes transformed into a malignant one."

Nasal Tumors.—W. E. Casselberry (6, Nov. 5, '98) reports a case of fibroma attached to the horizontal plate of the ethmoid and filling the entire left nostril. Removal by electro-cautery snare resulted in a cure with no recurrence after eleven years. J. F. McKernon (1, Feb.) writes of a case of epithelioma of the nose involving the external wall and inferior turbinate in a man aged 72 years. All the diseased parts were removed with good results; no recurrence after several months.

W. J. Reynolds (26, Dec., '98) reports a case of cylindroma in a woman of 65. Removed by Ollier's operation. Patient died in two days of shock and meningitis. I. N. Bloom (71, Jan.) records the case of a woman of 53 in whom four weeks after a pimple showed on the nose there was a typical development of epithelioma of the base of the nostril, involving the inside of the ala and the cartilaginous septum of one side. The diseased part was curetted thoroughly and then given a free application of caustic potash. Three or four weeks later a small spot appeared and was cauterized, after which there was perfect recovery and no recurrence. Krakht (22, No. 46, '08) reports a similar case and treatment with the same results. J. F. Newcomb (1, July) records a case of adeno-carcinoma of the nose in a woman of 62 years, making a total of 32 such cases to date. Several instances were cited by other speakers (Am. Laryng. Assoc.) seeming in a measure to bear out Plicque's statement that frequently the ablation of numerous benign polypi is followed by new polypi composed of epitheliomatous tissue. Newcomb regarded this statement as incorrect. Lederman (1, Aug.) reports a case of endothelial sarcoma of the nose of four or five years' standing in a man 41 years old. Chiari (14, No. 28) gives the details of a case of ivory exostosis involving the middle turbinate and inner angle of the orbit. Removal of the nasal portion was followed by speedy recurrence and C. seems to think the malignancy of this variety of growth is demonstrated. R. McKinney (6, Mar. 4) reports a case of papilloma of the upper anterior part of the cartilaginous septum.

Miscellaneous.— E. W. Shields (48, Mar. 25) reports a case of primary tuberculosis of the skin of the nose, the diagnosis being clinical, not microscopical. Lang (14, Mar. 10) gives the results in eight cases of nasal lupus operated on by him. One was recent. Two never reappeared, two returned, with recurrence, one at the original site, the other at some distance from the original site. Three showed no recurrence after 15, 20 and 42 months respectively.

G. D. Murray (68, Mar. 25) reports eleven cases in which *eruptions* on the *face* were cured by relieving intranasal pressure. Spurs, deflected septums, polypi, etc., were removed.

Kompe (127 B. ix H. 2) considers spontaneous nosebleed in individuals above 40 years of age, which is not due to well-recognized local causes, as a probable sign of general arterio-sclerosis, and suggests careful examination for sclerosis of the vessels of the brain.

Rhinoplasty.— Kuemmel (18, May 11) advocates a return to the old *method of Tagliacorza* in which the flap is taken from the arm. In this way increased disfigurement resulting from taking the flap from the forehead and cheeks is avoided.

Vantrin (abst. 17, Dec. 9) reports a successful case of rhinoplasty with a *metallic support*. There was no sign of intolerance of the foreign body, and healing by first intention was secured.

Nasal Deformities.—Roe (83, June) in an article on "Nasal Deformities" gives details of *subcutaneous operations* for the several varieties of deformity involving bone or cartilage or both. Pictures of patients operated on show the excellent results attained and that without scar. Such

operations with successful results represent the highest reach in the whole field of plastic surgery.

As stated by Roe, it is only with the most careful asepsis and most assiduous after-care that this kind of work may be justifiably undertaken, as the least failure may result in worse deformity than that for which operation is undertaken. It would be impossible to abstract the article with any satisfaction and the reader must be referred to the original.

Nasal Bacteria.—D. B. Kyle (7, June 6), from investigations including over 200 inoculations, concludes that in a great many cases of lesions of the mucous membranes of the upper respiratory tract the part played by bacteria is purely secondary. He believes it well nigh impossible to render the mucous membrane thoroughly aseptic. Many pathogenic bacteria are found on the mucous surfaces in healthy noses, but if the parts are normal they do not tend to multiply. Vansant (27, Oct. 29, '98) believes as the result of investigations that nasal discharge is often kept up by the presence of pathogenic bacteria, hence the need of frequent cleansing treatment to cure.

Infection.— Myles thinks it practically impossible to *operate* on the *nose* and *naso-pharynx* at one operation without some fever. When possible he operates on the nose first and allows the wound to heal before working on the naso-pharynx.

Hypertrophic Rhinitis.—Hamm (19, Sept., '98) reports cure in one week from the *submucous injection* of eight minims of a ten per cent solution of *zinc chloride*. He recommends the treatment.

W. K. Robinson (7, May 27) calls attention to the engorgement of the turbinals which occurs in healthy women at the menstrual period and gives the history of three cases in which atrophy resulted from cauterization during the development of puberty.

W. F. Brokaw (134, Oct.) reports good results in the treatment of nasal and naso-pharyngeal catarrh by electricity. He uses the sinusoidal current preceded by the galvanic current. He regulates the strength of current by the meter and cautions against the use of too strong applications. While he has failed to cure in some cases, yet he has been able to avoid cutting or other destructive operations in most cases and believes that the treatment is a marked advance on that generally in use.

Nasal Catarrh in Children.—C. C. Rice, in a paper read before the N. Y. Acad. of Med. (1, Jan.), states his belief that the pharyngeal tonsil is the cause of nasal catarrh in nearly all infants and children and that the rhinitis cannot be cured till the cause is removed by In the discussion following A. Jacobi controoperation. verts this view and places the cause the other way, the enlargement of the lymphatic tissue in the naso-pharynx being due to the rhinitis. He claims the almost universally present rhinitis in infants with few cases of adenoids, compared with the great frequency of adenoids in childhood, furnishes proof of his contention. While admitting that many cases of pharyngeal tonsil require surgical treatment, he maintains that proper daily cleansing of the nose in infancy by irrigation will prevent many cases of adenoids from developing and will relieve many others where the tissue is not too old and hyperplastic. He advocates daily cleansing of the interior of the nose just the same as the exterior. [Undoubtedly in the present condition of civilized humanity the treatment of nasal catarrh in infants is almost universally neglected and such is likely to be the state of affairs for some time to come, with the consequence that the first call for treatment by the parent upon either the general practitioner or the specialist usually is made after the adenoids are too fully developed and doing too much mischief to warrant dependence on medical treatment. Medical treatment finds its place only as a means of prevention and in those cases in which the growths are not producing urgent symptoms.]

Membranous Rhinitis.—Under the title "Non-diphtheritic Pseudo-membranous Rhinitis," Price-Brown (2, May) gives a careful resume of the literature bearing on the subject.

While a large majority of the textbooks do not recognize such a disease, a number of recent writers have reported cases which seem to prove its existence. In only one of the two cases reported by the author was a bacteriological examination made, the diagnosis in the other being clinical only. Price-Brown's conclusions are: I. That nondiphtheritic pseudo-membranous rhinitis does sometimes occur, and though a very rare disease, it is probably as frequent as primary nasal diphtheria 2. That on clinical grounds alone it is possible in a majority of cases to distinguish it from genuine diphtheritic disease. 3. That owing to a possible mistake in the diagnosis, isolation in all cases should be imperative until a reliable bacteriological examination can be made.

D. J. G. Wishart (1, Sept.), under the title "Fibrinous Rhinitis" reports seven cases occurring in his practice within fourteen months, no cases having been seen in the previous six years. In two cases the K-L. bacillus was absent, in five present, but in one of the former diphtheria of the pharynx developed in a sister after exposure. W. finds 98 cases (including his own) reported since 1895, of these the K-L. bacillus was present in 69. His conclusions are: 1. Fibrinous rhinitis and diphtheria are not distinct diseases. 2. All cases of fibrinous rhinitis need the same precautions as to isolation that diphtheria requires.

Lack (abst. 2, May) in a paper before the Royal Med. Chirurg. Soc. of London, analyzes 36 cases of *membranous rhinitis* seen by him. He finds it very common in his clinic. The chief symptoms are local and it is very chronic, lasting

on an average six to eight weeks. General symptoms are very mild or absent and there is complete absence of paralyticseauelæ. He compares the disease with nasal diphtheria and reports the constant presence of the K-L. bacillus, usually the large variety, of full virulence on animals and neutralizable by antitoxin. He reaches the conclusion that fibrinous rhinitis is a mild variety of diphtheria, its mildness apparently depending on some differences in the organisms associated with the K-L. bacillus. Two cases of membranous rhinitis were seen in the Editor's clinic the past year. small children in the same family. There was abundant membrane in the nose, none in the throat, no systemic symptoms and no K-I. bacilli found on examination. In the present unsatisfactory state of knowledge as to the exact bacilli always causing diphtheria one would hardly seem justified in treating such cases as other than true diphtheria, even though satisfied that it is not the ordinary form.]

Gonorheal Rhinitis.—H. de Stella reports a case of gonococcic rhinitis in an infant of two months. There was impediment to nasal respiration from birth, preventing nursing. Pus from the nostrils showed abundant gonococci. The child had had purulent ophthalmia, which only yielded to energetic treatment, and there was also otitis media consecutive to the rhinitis. Syphilitic roseola followed later. The father had had gonorrhea and syphilis and transmitted both to the mother. The treatment used was, lavage of the nostrils with boiled water, and insufflation of the following powder:

16	Powdered fused nitrate of silver 3 grs.
	Talcum 150 grs.
	Or substitute for the powder a solution of protar-
	gol I in 50, or even I in 10, painting the nasal
2.3	fosce with a pledget of cotton saturated in this

In the intervals have the parents introduce:

Ŗ	Vaseline 225 grs.
	Boric acid
	Menthol $2\frac{1}{4}$ grs.
	Three times daily.

Atrophic Rhinitis.—By far the most important contribution of the year to our knowledge of ozena is furnished by Cozzolino (126, July), translated by R. B. H. Gradwohl (3, Aug.). His observations are based on a study of forty-two cases of true ozena, which comprehended all types of the disease and all ages. He made bacteriological examinations of all cases, finding great numbers of the bacillus mucosus of Abel in all, the next most frequent bacillus being the pseudo-diphtheritic bacillus, which was found eight times. Various other bacilli and cocci were found. He found the bacil. mucosus not on the outer surface of the crusts, but only thriving on the inner surface on the mucous membrane and in the submucosa. He gives a full description of the characteristics and culture characteristics of the bacil. mucosus, which he considers the true bacillus of the disease, though bearing no relation to the etiology. Tests with a large number of germicidal agents showed that the only ones that had any effect in strength tolerated by the nasal mucous membrane were trichloracetic acid 100 per cent, creosote 4 per cent, trichloride of iodin and corrosive sublimate in I to 1 per cent solution. Animal experimentation failed to develop a serum or antitoxin of any strength although the bacillus was distinctly toxic in its action. He gives the reasons for his disbelief in any good to be derived in the treatment of the disease by diphtheria antitoxin and gives details of twelve cases in which he tried that treatment, using 20,000 to 25,000 units in each case, the results being no better and of the same nature as would be derived from the internal use of potassium iodide. His best results have been obtained by thorough curettement followed by antiseptics. In closing the bacteriological section of the paper he frankly admits that his results in experimentation with the bacil. mucosus have differed in some respects from those of other investigators, as they have differed from one another.

In the latter part of his paper he goes very fully into his histologic and pathologic findings in ozena. While he differs in some respects from Cholewa and Cordes, who wrote the chief article on the subject last year, yet as will be seen he agrees with them in their chief contention. Dividing the stages of the disease into three according to the degree of atrophy, he finds "that in the first two stages the bone becomes thinned out and sensibly eroded by the process of resorption, while the mucous membrane is but slightly changed." Further on he says, "My researches have led me to the belief that the process of ozena has its point of beginning in the bone," and "no case of ozena arises without a favorable individual predisposition." He believes the bacil. mucosus and other germs to develop simply because of the favorable field, and that they have nothing to do with the real atrophic process; on the contrary, by the irritation which they produce, they may even produce an infiltration of the tissues of the mucosa, simultaneously with the development of the disease. It is by such action that he explains the polypoid hypertrophy of the middle turbinate so generally present in these cases. He does believe the bacil. mucosus to be the etiologic factor in the production of two of the most disagreeable symptoms of ozena—fetidity and crusts.

His final conclusions are: "Ozena is neither a consequence of other diseases nor is it a rhinitis..... the middle turbinate is rarely the site of atrophy and this is in perfect accord with the embryology of the parts.....the veritable essence of ozena resides in the bone and not in the mucous membrane." He believes that "the ozenous patient is born ozenous, that is to say, the child which afterwards suffers

with the full manifestations of the ozenous affection comes into the world with a special predisposition for those nutritive changes which determine an erosion of the mucosa of the turbinate bodies." A full perusal of the article in the Annals of Otol., Rhinol. and Laryngol. is to be recommended to all interested in the subject.

L. Browne in his textbook (and also in 17, Aug. 26) describes what he terms the facial type of ozena, consisting of an abnormal patency of the anterior nares with an upturned condition of the nose. He believes that this peculiar conformation allows the air to pass directly through the nose without going to the upper parts of the cavity, thus exhausting the inferior turbinal, and at the same time, being insufficiently warmed and saturated, it dries the naso-pharynx and lower respiratory passages. Gerber's investigations (see article on naso-pharynx) seem to support Browne's clinical observations.

C. C. Rice (70, April 1) finds atrophic rhinitis a very common affection in children even in very early years. He believes it to be commonly atrophic from the beginning, and that it arises chiefly from neglect of the nose. Eruptive fevers start many cases. For treatment he recommends a cleansing spray, containing some hydrogen peroxide. He also uses cocaine in one-half per cent strength, followed by an oily spray.

Chauveau (Jour. de Clin. et Ther. Enf., Oct. 6, '98) reports a case of ozena in a child four years old in whom difficult breathing, stridor and wheezing existed for several months, due to crusts forming in the larynx. Expectorating these relieved for several days. Death occurred suddenly during sleep, probably from glottic spasm. The mother and an aunt had atrophic rhinitis.

Chauveau (abst. 2, Dec.) found in eleven of sixty-five cases of ozena *nervous heredity*, with degenerative symptoms. He believes the ozena is probably of trophic origin, rather

than from bacteria. Cardiac troubles have been noted by some observers. C. found two cases of pseudo-angina pectoris, ten cases of palpitation, frequently some cardiac failure; these troubles were usually reflex; in only six were there true cardiac lesions.

Treatment.— Braat (2, Mar.) reports fifteen cases of ozena treated by unipolar interstitial electrolysis. In three the result was negative, but two of these were found to have empyema. In one case brain symptoms arose and the treatment was abandoned. Five were cured by 3, 7, 5, 8 and 6 sittings, respectively. The others were relieved. The treatments were given at intervals of ten to fourteen days, were of five to ten minutes' duration with a current strength of nineteen or twenty milliamperes.

Gougenheim and Lombard (abst. 2, Apr.) report seven cases treated by *cupric electrolysis*. in which the fetor was relieved.

McBride (95, Mar.) gives his experience with cupric electrolysis in the treatment of ozena. The strength of current used was from three to ten milliamperes; the copper needle attached to the positive pole was inserted into the inferior or middle turbinal, the platinum negative needle was passed under the mucous membrane of the septum, cocaine being first applied; each sitting lasted about ten minutes. There was little complaint of pain as a rule, and no disagreeable after-effects. Details of eight unselected cases are given. Improvement began at once in all. Fetor disappeared, the mucosa became more moist and the crusts were more easily detached. Four patients were practically cured for eighteen months; in the others the cure was temporary and not perfect.

Oquendo (II, Sept. 17, '98) believes the bacillus of Loewenberg, to be the primary cause. For treatment he uses cupric electrolysis and has no faith in serum therapy.

Hamm (13, Apr. 11) after cleansing the nose insufflates a mixture of equal parts of citric acid and sugar of milk with a powder blower. All odor is dispelled at once, and sometimes for several days. The psychic effect of this improves the general health and cure of the ozena may follow. H. has had several cases under observation for months with no recurrence, but makes no claims for citric acid, except its remarkable deodorizing qualities.

Cathelin (52, Nov. 13, '98) claims a cure in one case of ozena by *antitoxin*. As, however, there was no atrophy of the mucous membrane and vigorous local treatment was carried out the influence of the antitoxin is doubtful.

P. Jacques (11, Aug. 19) considers ozena only a result of *sinusitis*, and that there is no such thing as idiopathic ozena. Search for the diseased cavity and treat that as the first procedure in the treatment of ozena.

Bronner (in a paper read before the Brit. Med. Asso., 2, Oct.) highly recommends formalin I to 2,000 to I to I,000 in water, as a wash in atrophic rhinitis, or a .2 to I per cent. solution in water with a little glycerin, used as a coarse spray, diluting in either case if too painful. In the discussion Horne favored the remedy. Bobone and Williams found it too painful.

MIDDLE TURBINAL.

E. Pynchon (1, Sept.) points out the symptoms which may arise from hypertrophy of the middle turbinal and advocates the removal of sufficient of the body to relieve pressure. He has had no bad results from the operation. He describes a small shielded trephine which renders the operation safer and easier.

Rischawy (14, Feb. 19, Mar. 16) emphasizes the possibility of *obstruction* of the *lachrymal* duct from pressure by

the middle turbinate, and advises the removal of the anterior extremity of the latter, where it appears to offend.

Delle (11, Dec. 10, '98) records a case of *endothelial* sarcoma of the middle turbinal in a woman aged 59. The ethmoid cells and base of the skull were involved, causing meningitis and death without operation.

Packard (17, July 16, '98) records a case of reflex amblyopia resulting from the removal of a small piece of the middle turbinated bone.

Olfactory.— Tresilian (2, Dec.) reports a case of anosmia, caused by an injury to the head from a fall. The patient was a woman of twenty-two. Both taste and smell were at first lost, but the former was regained in a few days, while the latter was still absent after a year or more. The fifth nerve was uninjured. She complained of a nasty smell present at all times, and of a frequent frontal headache. Treatment with strychnia and galvanism was of no avail. T. thought the condition due to injury to the olfactory bulbs with laceration and possibly separation.

Toulouse and Vaschede (abst. 2, Dec.) find as the result of their researches that four-fifths of all subjects have the sense of smell more highly developed in the left than in the right nostril. They are inclined to attribute this difference to the greater activity of the left cerebral hemisphere, having in mind the nondecussation of the olfactory nerves.

Functional.— Ball (8, Feb. 11), in an article on parox ysmal sneezing and allied affections, gives his observations based largely on a personal experience of one hundred and twelve cases. One-half of the patients were sufferers from asthma. As to sex, there was about an even division, and the age in the majority of cases was between twenty and forty. It usually develops in the earlier period, but may begin at any age. He gives a general consideration of local conditions and the progress of the disease and discusses the treatment. A

favorite pill contains one grain of sulphate of quinine, 1-16 grain of iodide of arsenic, and 1-12 grain of extract of belladonna, to be taken three times a day, the arsenic and belladonna to be increased as the patient can stand it. Locally he uses cocaine, menthol and menthol-camphor. [I have found a 10 per cent solution of ichthyol in water applied to the middle turbinate on a cotton swab very serviceable in this condition.—Ed.]

NASAL HYDRORRHEA.

St. Clair Thomson, in an article on this subject (1, Nov., '98), gives an abstract of his exhaustive essay, read before the British Medical Association, in 1898. He speaks of the chapter on nasal hydrorrhea in Bosworth's "Diseases of the Nose and Throat," as first calling attention to the subject. Of the eighteen cases described by Bosworth as coming properly under the title nasal hydrorrhea, Thomson, after critical examination, excludes all but three. He considers that six were undoubtedly instances of other affections, and that nine were most probably due to disease quite unconnected with the nasal mucosa. The author had a case in which, in an otherwise healthy subject, there was an almost constant discharge of cerebro-spinal fluid from one side of the nose, and it was his studies in connection with this case which led to his criticism of Bosworth's classification. He thinks that of Bosworth's cases, no less than thirteen were in all probability cerebro-spinal rhinorrhea. In the original essay the author deals at length with the differences distinguishing cerebro-spinal fluid from intranasal secretion, and considers the possibility of the hydrorrhea originating in the accessory cavities of the nose. He concludes that in the majority of cases reported the condition is not a distinct morbid entity, but only a symptom of various affections. He would, however, retain the term nasal hydrorrhea and limit it by defining "the affection as one in which there is

profuse watery discharge secreted by the nasal mucosa and not dependent on intranasal or neighboring sources of irritation." He finds the disease to be one of adult life and affecting males and females indifferently.

The flow usually takes place from both nostrils and handkerchiefs soaked with it generally dry stiff.

The important point in Thomson's contribution is the differentiating the cases in which the flow is an escape of cerebro-spinal fluid. This has an important bearing on the treatment, as in such cases it is very necessary to avoid anything which might lead to infection.

In the cases to which the author would limit the term nasal hydrorrhea, he would use only such treatment as is useful in hay fever. He pleads for moderation in the use of the galvano-cautery, for while there may be gained a sense of immediate relief, the after-results may be worse than the original disease. "Careful general treatment, hygienic, dietetic and climatic, with possibly a visit to a suitable spot, will generally secure very satisfactory results."

Melzi (2, Dec.) describes a case of nasal hydrorrhea in a woman aged forty, in whom the condition had been present six years, dating from her last confinement. The discharge was from the left nostril only, was odorless, colorless, nonirritating, and present in such great quantity as to interfere with the patient's work. The composition of the fluid differed materially from normal cerebro-spinal fluid. The sense of smell was unaffected. No treatment seemed of any avail, except for short periods; among the means employed were vibratory massage, atropia, and massage with plugs saturated with a 5 per cent solution of protargol. The latter means was used successfully in one case by Dr. Alexander of Berlin.

Nikitin (2, July, p. 367) gives the case of a girl of eleven who suffered from a discharge of muco-pus from the nose from infancy, and until the removal of adenoids, which were present. After this the muco-pus disappeared, but was followed by a watery discharge, which was eventually cured by the use of tonics and astringents internally (iron, arsenic, hydrastis, atropin) and a weak zinc lotion. Nikitin regards most cases of hydrorrhea as due to paresis of the vaso-motor nerves of the nasal mucosa, often reflex, as in this, from the adenoids.

SEPTUM.

Deflections.—In a symposium on the subject of deflections of the nasal septum before the Laryngol. and Rhinol. Section of the N. Y. Acad. of Med. (1, June), F. H. Bosworth, M. J. Asch, J. O. Roe, A. W. Watson, E. B. Gleason and B. Douglass each read a paper on his individual method of operation for the correction of such deformities. The essential point in Bosworth's operation is the use of the saw for the removal of the thickened portion of the septum projecting from the convex side. B. has continued to use this method with complete satisfaction in nearly all cases since his first report of one hundred and sixty-six operations twelve years ago. B.'s operation has the advantage that in the cases to which it is applicable it may be done without general anesthesia.

The essential point of the Asch operation is the use of a pair of scissors, something on the style of a large button-hole scissors, with which a horizontal and a vertical button-hole are cut, crossing each other at the center of the deviation, and thus completely breaking up the resiliency of the cartilaginous septum. (These two papers bore more particularly on the subject of the cartilaginous septum.) An oval vulcanite tube is worn for four or five weeks, until healing is complete; general anesthesia and rest in bed for a day or two are required for this operation as a rule.

Roe lays especial stress on fracturing the anterior end

of the bony septum, as without this he thinks it impossible to get the best results. The resiliency of the cartilaginous septum he destroys by several incisions with a knife, either done submucously or at least so as to avoid cutting through the mucous membrane on the concave side. He finds it possible to remove all internal support and dressings by the fifth or sixth day.

The essential point in Watson's operation is the beveled incision, made just below the horizontal angle on the convex side from below upward, and if a perpendicular angle exists a similar incision in front of this, so that the deviated portion may be pushed to the concave side, where the lower edge of the free portion will catch the edge of the fixed portion of the septum. Any excessive thickening is first removed with knife or saw. W. endeavors to avoid incision of the mucous membrane on the concave side. The Gleason operation is very similar to that of Watson, or vice versa, the incision being perhaps rather more extensive.

Douglass sums up the points in his operation as follows:

1. Buttonhole the septum at the point of greatest obstruction, and incise obstructing ridges or convexities in the line of convexity.

2. Break with forceps all fibrous bands and separate cartilage from the superior maxillary spine at the floor of the nose.

3. Overlap cut edges and introduce splints.

4. Treat antiseptically for two weeks. The various steps of the operation and the special instruments used by each operator are fully described in the original articles, to which the reader is referred.

In the discussion following the papers it developed that the Asch operation was decidedly the favorite with the members generally. The Mayer vulcanite splint, properly fitted to each case, also met approval. The splint, as ordinarily made, suits the ordinary case, but it should be shortened or trinimed to fit any case. [The Editor has found that a thin strip of celluloid placed on one or both sides of the nasal passage very much facilitates the introduction of the splint as it is reinserted from day to day. This operation is in some cases very painful, and the protection afforded by the celluloid saves the patient much discomfort. The strips are easily removed when the splint is in place.]

Richardson (136, '98) reports his method of dealing with deflections. He breaks up the resiliency of the cartilaginous septum, and, if necessary, the bony septum very thoroughly, then uses a splint for only seven to ten days. He does not remove the splint before the seventh day, depending on cleansing with sprays, etc., with the splint in situ. He claims most satisfactory results. In the discussion following (Am. Laryng., Rhin. and Otol. Soc.) most of the members differed with him as to the time necessary to wear the splint. Roe, however, removes and leaves out the splint in from three to five days, and does not remove till then. All except Roe had had very serious hemorrhage occasionally.

Price-Brown (3, May) gives his experience with *rubber* splints made from thick rubber sheeting, after any operation in the nose requiring separation of the parts. He leaves the splints in for one or two weeks. He finds them very satisfactory.

Simpson (I, Mar.) recommends the use of Bernay's sponge (a specially prepared, strongly compressed cotton fiber material) cut into proper shapes for convenient use, as a packing in operations on the anterior or posterior nares, and as a substitute for splints in the later stages of septum operations. In the discussion (Sec. Laryng. and Rhinol., N. Y. Acad. Med.) following, Quinlan and J. Wright opposed the use of these splints; Chappel and Coffin favored them.

MISCELLANEOUS.

Lermoyez (126, No. 12, '98) reports a case of chancre of the septum, which gave rise to errors of diagnosis. On the

eve of an extensive operation for the removal of the tumor a syphilitic eruption cleared up the diagnosis and specific treatment gave relief.

- G. L. Richards (1, Dec., '98) reports a case of *bleeding* polyp of the cartilaginous septum. Removal by cold wire snare was followed by profuse hemorrhage.
- J. P. Clark (6, Jan. 7) records two cases of sarcoma of the septum. One was a male, aged thirty-five, in whom several operations were done for removal, but the patient finally succumbed. The other was a female aged forty-two, with a family history of cancer. A radical operation was done and there was no recurrence.

ACCESSORY SINUSES.

Literature on this subject has been especially abundant during the year, indicating the great and increasing interest of the profession and the recognition of the importance of the diseases of these cavities. In addition to the numerous journal articles Hajek of Vienna has published during the year a large monograph on the subject, which easily occupies the most important place in the literature of the subject up to the present date.

Kicer (1, Feb., '99) gives a valuable article on the Accessory Sinuses based on two hundred post-mortems. In the two hundred cases, empyema of the maxillary sinus existed in thirty-nine, of the sphenoid in twenty-nine, seventeen being bilateral. Empyema of the ethmoid existed in seven, six being bilateral, while empyema of the frontal was present in thirteen cases. In the two hundred autopsies one hundred and five contained products of empyema in one or more of the accessory cavities. [Some of the figures given are confusing and to the Editor inexplicable, so that no attempt is made to abstract.]. In eleven cases in which all the accessory

sory sinuses contained a nonpurulent secretion, the case records indicated that the condition had been overlooked during life. K. gives the results of measurements of the various cavities, fairly agreeing with previous investigations on the subject.

From experiments conducted he reaches the conclusion that puncture of the frontal sinus from the cavum nasi is a decidedly risky procedure, the probe as a rule entering the sinus only after piercing several cells, and in several instances penetrating the lamina cribrosa and entering the cranial cavity without the operator knowing that the probe had taken the wrong direction.

L. Browne, in the last edition of his work on the Throat and Nose, quotes some very interesting figures. From postmortems made by Gradenigo on two hundred and three hospital cases without reference to cause of death, chronic empyema of the antrum was found in forty-five, and the conclusion follows that at least 20 per cent of all serious hospital cases are the subjects of chronic empyema of the antrum, to say nothing of the other accessory cavities. B. also quotes E. Fraenkel's reports on one hundred and forty-six postmortems on patients who had died in his hospital, who had sinusitis and yet in not a single case had the condition been recognized during life. Weichselbaum, in a large number of post-mortems on patients dead of influenza, found that inflammation of one or more of the accessory cavities existed in 90 per cent of the subjects examined.

Browne reaches the conclusion that chronic sinusitis of all the cavities is frequently passed unheeded in its acute stage, and derives comfort from the fact "that in a large proportion the trouble undergoes spontaneous cure or remains latent."

Lapalle (81, abst. 4, Oct.) gives the results of his autopsies of one hundred and sixty-nine bodies with reference to disease of the accessory sinuses. The cause of death was most frequently one of the following: Acute pulmonary

disease, tuberculosis of lungs or meninges, cancer, heart disease, brain affection, kidney affection. Fifty-six were women, one hundred and thirteen men; fifty-five empyemata of the different sinuses were found, being 32.54 per cent; 21.43 per cent of the women and 38.04 per cent of the men were Seventeen acute lung affections furnished nine affected. empyemas, two among five women and seven among twelve men. Fifty-nine cases of tuberculosis furnished nineteen cases, two among eleven women and seventeen among fortyeight men. Sixteen cases of cancer furnished five empyemas, one among eight women and four among eight men. Nineteen cases of cerebral disease furnished eleven sinusites, one among seven women and four among twelve men. two cases of facial erysipelas, both had sinusites. Maxillary sinusitis was found forty-eight times, sphenoidal nineteen, ethmoid six, frontal five. Thirty-two times the maxillary sinusites were unilateral, sixteen times bilateral. The sphenoidal disease was unilateral ten times and bilateral nine times; ethmoid five times unilateral and once bilateral. Maxillary sinusitis occurred alone in thirty-one cases, with sphenoid in thirteen, with ethmoid in five, with frontal in three. Sphenoidal sinusitis occurred alone in five, combined in fourteen. Ethmoid sinusitis was always combined with other sinusites as were also those of the frontal.

Among the journal articles on the *anatomy* of the accessory cavities, those of H. A. Lathrop (103, Feb.), J. E. Schadle (86, Jan. and Feb.) and M. H. Cryer (7, Oct. 14) are especially well illustrated, and give the results of original research.

Finlay (58, Nov., '98) reports a case of thrombosis of the cavernous sinus in a girl of fifteen, from suppuration of the nasal acessory cavities. The case resulted fatally.

Ebstein (14, No. 28) reports a case of *orbital phlegmon* following an acute empyema of the frontal and ethmoid sinuses. Removal of the anterior end of the middle turbinal and opening into the ethmoid cells gave relief and cure.

Schlafenhaufer (14, Aug. 31) reports a case of cystic degeneration of the mucous membrane of the nose and all the accessory cavities, except the frontal, which resulted in death from meningitis. Nose and cavities were found filled with cysts.

J. D. Arnold (84, June) calls attention to the anomalous connections between the various accessory cavities and suggests that many times an obstinate empyema of one cavity finds explanation in a disease of an adjoining cavity. He cites an instance from his own practice in which long-continued treatment of an antral empyema by a dentist failed to cure. A. found a diseased lachrymal sac and duct, which opened into the middle meatus in such a manner as to discharge directly into the antrum. Cure of the dacryocystitis was followed by prompt cure of the antral disease.

Treatment.— Seifert (13, No. 21) uses the Politzer bag as an aspirator applied to the nose while the patient swallows, both as an aid to diagnosis of disease of the accessory cavities and as a means of thoroughly removing their contents.

E. L. Vansant (17, Sept. 9) describes a method of treatment for *headaches*, due to conditions in the various accessory cavities. This consists in syringing the cavities with *hot*, *dry air* under pressure, cocaine or suprarenal capsule being first used to shrink the tissues from the normal openings. The instrument used is similar to one used by dentists, but is larger and arranged for nose and ear work.

Gerber (abst. 2), in his report on five years' work in his Poliklinik, states that he has become more conservative and operates less. He has not had good success with empyema of the accessory sinuses, getting few cures, except after long-continued (years) treatment.

ETHMOID.

Empyema.— Fisher (abst. 2, June) reports a case of diffuse cellulitis of the orbit secondary to empyema of an ethmoid cell. The patient was a male, seventeen years old. Deep incision through the upper lid and insertion of a drainage tube brought pus, but did not relieve the proptosis. Five days later the sinus opened spontaneously from the depth of the orbit through the skin, near the inner canthus, giving relief to the proptosis. Failing to heal promptly, exploration discovered dead bone and one or two holes leading into the ethmoid cells. Through one of these a drainage tube was passed into the nostril, giving good exit to the pus and cure ensued.

Mucocele.— Hotz (7, Apr. 1) reports a case in a girl of thirteen. Four years before the patient had fractured the nasal bones and suffered from nasal catarrh. There was a smooth, round, firm tumor, causing the left eyeball to protrude. H. made an incision from the root of the nose to the middle of the brow. The ethmoid cells were found to be converted into one large cavity, filled with a creamy material. The fluid was withdrawn and daily irrigation with boric acid solution brought rapid healing.

ETHMOID DISEASE IN RELATION TO ASTHMA.

In a discussion before the Am. Laryng. Asso. this subject was quite fully considered (I, July). H. L. Swain thought that many cases of asthma were due to the peculiar edematous or soaked condition of the ethmoid tissues, which in more marked cases developed polypi, and that even where such condition could not be discovered intranasal treatment often gives relief. Many cases, however, were not to be cured by any local treatment, but by some change in environment.

Bosworth took the ground that the whole question

turned upon the matter of the respiratory function of the nose. The true condition in asthma was not a spasm, but a vaso-motor paresis, and an ethmoiditis was at the bottom of the case. Probably the vaso-motor centers for this division of the body were not far from the ethmoid. The indication then was to cure the ethmoiditis; the removal of polypi was not enough; we must uncap the egg-shell-like ethmoid and remove the points of contact principally because they encroach upon the nasal lumen. He does not find curette, forceps or gouge satisfactory, but uses small burrs, continuing till free drainage is established. He has never had bad results from the procedure. He had found intranasal operation effective even in cases in which cocaine did not relieve. Purulent ethmoiditis does not give asthma, but inflammatory disease does.

Shurly finds the question a difficult one, and believes we must go further back than ethmoiditis and edematous rhinitis, some had psychical causes.

J. N. MacKenzie believed the cause of asthma did not reside in any special peripheral organ, but in the individual himself. Irritation might come from many sources in the body, the nose being only one. Makuen said that asthma depended upon faulty nervinuscular action, which might be due to any one of a thousand causes.

In a discussion of nearly the same subject before the London Laryng. Soc. (2, July), very largely participated in by the members, conservative ground was taken by nearly all. Most of those who spoke considered that much relief and even some cures might result from treatment of any nasal disease present, but that it was impossible in any given case to promise cure or even relief to the patient. The very rational view was taken that in any asthmatic with diseased nasal cavities, the latter should receive treatment and the possibility of benefit presented to the patient as an argument in favor of nasal treatment.

R. Payne (23, May) believes in the nasal origin of most cases of asthma, and advises treatment accordingly.

ANTRUM OF HIGHMORE.

Cobb (Trans. Am. Lar., Rhin. and Ot. Soc., '98) reports on thirty cases of *empyema*. Ten were due to dental causes, seven to acute catarrhal conditions. In six of the latter cleansing sprays and washes sufficed for cure, and one which was opened healed no quicker than the others. Four were syphilitic: one malignant (sarcoma). Darkness of antrum on transillumination is not due to pus present, but to thickening of mucous membrane, the shadow being as dark after thorough washing as before. In case ethmoid disease is the cause of empyema of antrum, the former must be first cured.

Cline (7, Sept. 23), in a paper before the Laryng. Sec. of the A. M. A., reports one hundred and eighteen cases of antral disease operated on. C. favors *alveolar* opening, even if necessary to remove a sound tooth, his chief reason being that the patient may the better cleanse the cavity. In the general discussion following the paper the various points of opening each had advocates.

D. Grant (2, Apr.) advances the idea that antral disease of alveolar origin should be treated by alveolar opening, those of other origin through the nose.

Harris (I, Mar.) reports a case of *syphilitic necrosis* of inner wall of the antrum. Having opened and curetted the antrum without relief, he then removed the denuded bone forming the inner wall, and obtained a cure. The cavity of the antrum was made continuous with that of the nose.

Curtis (136, 1898) gives two instances of failure of transillumination to indicate disease of antrum, one case of empyema and one of osteoma filling the antrum. In the case of the osteoma, although of several years' growth it produced no symptoms, except occlusion of the nostril, and the latter seemed to be due simply to the enlarged inferior turbinate.

Stucky (136, 1898) treats antral empyema by making a very large opening through the alveolus through a tooth socket, examining with ear speculum and mirror, curetting, washing and packing with iodoform gauze for forty-eight, hours, unless pain becomes great, in which case the gauze is removed earlier. S. claims speedy and permanent results, and opposes opening through the inferior meatus or canine fossa.

In a discussion before the London Laryng. Soc. (2, Feb.) the majority seemed to favor opening through the *inferior meatus* with a trocar, as getting the best drainage and quickest cure, amputating the anterior end of the inferior turbinate usually.

Roaldes (I, July) reports five cases treated by large opening in the *canine fossa*, and a counter opening in the inferior meatus, with free curetting and gauze packing, resulting in radical and speedy cure.

Avellis (13, No. 45, '98) doubts the existence of empyema of the antrum in infants, and criticises the cases reported as such. Stating that the antrum is only one-half mm. deep at the fourth month, and only theoretically present in first month, he concludes that an empyema is not to be thought of. He considers these cases to be tubercular disease of the medullary tissue in the nasal and palatine process of the upper jaw.

C. W. Richardson (I, Aug.) details two interesting cases in which asthma of a severe type was dependent on abscess of the antrum, cure being immediate on the cure of the antrum.

H. G. Ohls (7, July 15) gives an excellent resume of recent researches on antral empyema.

Mucocele of Antrum.—W. Scheppegrell (68, Aug. 26) reports a case in a man aged forty-two. Pain and pressure symptoms called for operation. An opening was first made for diagnosis through the alveolus, and then through the canine fossa for treatment. The cyst membrane was removed, resulting in cure.

Emphysema of Antrum.—Under this title D. B. Kyle (32, Dec., '98) describes five cases of accumulation of gas in the antrum. The chief cause is the generation of gases from a decayed tooth, which penetrates the antrum. The symptoms are much the same as in empyema, without the discharge. The prognosis is good if the offending tooth is removed and free vent given to the gas.

Epithelioma.— Phillips (136, '98) reports a case of primary epithelioma of the antrum in a man fifty-eight years old. The case seems to be a somewhat doubtful one in which an edematous polyp began to develop a squamous celled epithelioma at its distal extremity. A radical operation with thorough curetting was done, and there was no recurrence fourteen months afterward.

ACUTE INFLAMMATION OF ANTRUM.

Bernard (abst. 2, Apr., '99) reports two cases of acute sinusitis with coryza in which there was a blood-stained discharge resembling pneumonic sputum. Pneumococci were abundant. Resolution occurred in eight and six days, respectively.

Halasz (15, No. 46, '98) reports ten cases of serous disease of the antrum cured by simple puncture and washing out. The symptoms were about the same as those of empyema without the discharge.

O. J. Stein (Chic. Med. Rec., Nov.) had a case of erysipelas in a man of thirty-five, in which the disease began

in the mucous membrane of the nose and antrum, appearing on the bridge of the nose and the face three days later. The temperature was 105° F. when the patient was first seen. There was a fetid muco-purulent discharge from the nose and pus was demonstrated coming from the maxillary sinus. Bacteriologic examination of these secretions showed the streptococcus erysipelatosus in profusion.

FRONTAL SINUS. -

Empyema.— Ropke (5, B. 8, H. 2) reports twelve cases on which he operated by Kuhnt's method (incision along the inner two-thirds of the supraorbital margin and a vertical incision close to the median line), the whole anterior wall being removed. In eleven of the cases the ethmoid was also involved and R. made a wide passage through the floor of the frontal sinus as far as necessary into the ethmoid cells, and cleared them out, packed with iodoform gauze, bringing an end out at the inner extremity of the evebrow. He thoroughly removes the lining membrane from the frontal sinus. In six of the cases the sinus disease was bilateral and he removed the entire anterior wall and septum. He considers the frontal sinus probe indispensable in making a diagnosis, using a cannula to wash out and watching for pus. R. got union by first intention in seven cases, in other four cases secretion stopped in eight or ten days, only one case showing fistula and slight secretion after two months.

In a later paper Ropke (2, Sept.) reports thirteen additional cases. Of the total of twenty-five, thirteen were unilateral, twelve bilateral. All were cured. He concludes this paper by stating that, of course, he did not operate till he had exhausted conservative methods.

Nourse presented a case of frontal sinus empyema before the British Lar., Rhin. and Ot. Asso. (2, June) treated by the natural opening after removal of the front end of the middle turbinate. Perfect cure did not result even after long treatment. In the discussion by Milligan, Grant, Bark and L. Browne, the ground was taken that the treatment by external opening was the true conservative method, the passing of probe or tube into the frontal sinus being not devoid of danger and the treatment generally unsuccessful, while the external operation is devoid of danger and brings cure as a rule.

In a discussion of diagnosis and treatment of chronic empyema of the frontal sinus before the Laryng. and Otol. Sec. of the Brit. Med. Asso. (2, Sept), Symonds advocated irrigation though the natural opening in milder cases with injection of iodoform emulsion. Luc (Paris) read a paper on a case of chronic frontal empyema in which extension of the infection to the opposite side occurred in spite of three successive operations by the Ogston-Luc method. Finally diffuse septic osteitis of the frontal bone developed and death occurred in consequence of an intracranial infection in the region of the cortical motor centers of the limbs. The case was that of a strong young man of twenty, with good history. The operations were all done within a period of two years. Tilley also read a paper on a case in a woman of twenty-two, a bilateral affection of severe grade existed. After radical operation infection occurred, causing a succession of periosteal abscesses and finally invasion of the brain and death nine months after the operation.

In the discussion following the papers, Waggett asserted that all chronic frontal empyemas should be treated by external operation. Snow (Syracuse) had had excellent results from operation through the nose with cutting forceps and curette, throwing the anterior ethmoid cells and the frontal sinus into one cavity. He recommended the intranasal route for the majority of cases. Nourse spoke of the danger of the external operation and advocated drainage by the nat-

ural opening when possible. Mayo Collier strongly advocated external operation through a median incision. (Washington) preferred the Ogston-Luc operation. abandoned tubes and used gauze packing, drawing it out through the nose and closing the external wound. D. Grant strongly approved of experimental irrigation through the infundibulum; he found that Hartmann's cannula could be introduced in 50 per cent of all cases. He thought some cases recovered after discharging into the antrum, and that this might account for some of the remarkable recoveries recorded in antrum cases. Resection of the front part of the middle turbinal was a very important aid in treatment. conclusion he insisted that intranasal methods ought to be exhausted before any external operation was proposed. Hill (London) thought when the frontal sinus was known to be diseased it ought to be opened. He used no drainage tube nor any substitute. Tilley thought some of the milder cases might well be let alone without external operation. He advocated the external operation when there was much pus, associated with polypi and granulations in the middle meatus. After removing the front end of the middle turbinal, cleansing douches should be used for ten days, and then the radical operation done. He removes the front wall of the sinus so that the soft tissues may fall in and occlude the cavity. He makes the opening into the nose large enough to admit the index finger. Spicer would operate externally, but would deal with the nose first. In operating he did all of the sinuses at once if possible. Kipp (New York) preferred the radical operation, and did an operation similar to Röpke's. loff (Wieshaden) gave the history of a fatal case in his prac-Practically all the accessory cavities were involved. Operation was first done on the antra, then on the sphenoid, then the external operation on the frontal. Caries of the back wall of the frontal sinus occurred, necessitating a secondary operation a few weeks later. Death occurred a few days

after from meningeal infection. Logan Turner reported the results of investigations on five hundred skulls, as to the utility of transillumination, giving details by which he arrived at the conclusion that the procedure was of very doubtful value in disease of the frontal sinus. St. Clair Thomson thought that "free curetting" might mean too much. deemed it only necessary to remove the redundant polypoid degeneration, and thought that to attempt more was dangerous and might account for some unfavorable results. Eaber thought an external operation was best as soon as diagnosis was certain. Tenderness had misled him on one occasion and caused him to open into a healthy sinus. Transillumination was unreliable. Symonds, in summing up, thought there was general agreement on certain points: External operation was necessary in bad cases. 2. Attempts to break into the sinus from the nose were very dangerous. 3. Removal of front part of the middle turbinal was generally useful. He agreed with Thomson as to the amount of curetting.

Kenny (2, May; 61, Jan. 20) presents a successful case of frental sinus operation with a new instrument used instead of trephine or chisel, a modified circular metal cutter. He gives several points of advantage possessed by the instrument.

Barth (55, Heft., 4, '98) proposes a new operation for frontal empyema, which he has used successfully in two cases. He opens the sinus at a point corresponding with its natural outlet into the nose. An incision one inch in length is made alongside the root of the nose, through this opening he chisels through the nasal bone and nasal process of the frontal bone. By retracting the edges of the wound sufficient space is given for making a small flap of bone and periosteum, which is pried to one side by the chisel used as a lever. The mucous lining of the sinus is now incised and the contents allowed to escape. The sinus is next packed

with gauze, while with scissors, forceps and chisel, the upper part of the nasal cavity is cleared out till there is a broad, roomy communication between the sinus and nose. Curette the sinus, introduce drain from sinus to nose and close the external wound.

C. L. Gibson (123, Mar.) reports a case in which he operated, entering the left cavity, perforating the septum and liberating pus from the right cavity. Curetting and irrigating were done and drainage provided, but the patient died of meningitis nine days after the operation, and seven days after the first meningeal symptoms. Autopsy showed absence of the cerebral wall of the right cavity to the extent of an opening one inch in diameter, the opening being a malformation and not due to caries. A carious opening existed in the cerebral wall of the left cavity. G. attributed the disastrous result to the irrigation, which he concludes should never be done without positive knowledge of the absence of bony perforation. F. W. Hinkel (134, Nov.) gives details of an operation on the frontal sinus for empyema, in which the opening was made in the usual place with a small trephine, the sinus curetted, the fronto-nasal duct enlarged and the external opening closed. Healing of wound and cure of disease was perfect in eight days. A co-existing antral empyema was cured without further treatment.

G. Spiess (2, Nov.) describes his method of treatment of ordinary cases of frontal empyema. While recognizing the difficulties and dangers of probing the natural opening, and admitting that in perhaps the majority of subjects it is impossible, yet he advocates the endo-nasal operation, believing that it is quite early enough to resort to the external operation when the internal opening has failed. He operates under cocaine with a drill three mm. thick. After penetrating as near as possible to the nasal roof in the direction of the frontal sinus, he darkens the room and finishes the operation under the light of the Röntgen ray, being thus able

[This part of the operation is nicely illustrated in the Laryngo-scope, Dec., '99.] S. avers that by this means every danger of the endonasal operation as ordinarily done is obviated. After the drill has done its work the opening is enlarged by a cutting engine. In probing and syringing through the natural opening he also works by the aid of the X-ray. [This is certainly a most ingenious use of the new light and would seem to meet all the objections to the endonasal operation.]

Acute Frontal Disease.—H. L. Swain (29, Nov., '98), in acute frontal sinusitis, advises hot saline douches, Seiler's tablets in solution after warm douches, cocaine to be applied by the physician, followed by extract of adrenals, the latter to be continued in use at home. If granulations obstruct the opening of the canal, remove with a sharp scoop.

Pneumatocele.— Meyjes (2, Mar.) reports a case of this disease affecting the frontal sinus.

SPHENOID SINUS.

Cordes (19, No. 5, abst. 4, Oct.), in an article on the diseases of this sinus, states his opinion that chronic inflammation is more frequent than the acute, the former may succeed the latter, or may follow other chronic nasal diseases, particularly ozena. Among other symptoms the patient frequently complains of an actual or subjective cacosmia, with crust formation and secretion in nose and naso-pharynx. A yellowish green crust is usually found above the middle turbinal and creamy pus at this and adjoining points. A probable diagnosis may be made by exclusion, which can be made certain only by probing the sinus and finding pus or carious bone. Probing is not easy, as a rule, the ostium having no

constant size or position. A narrow nasal passage may also interfere, and the writer thinks that probing without a free field of vision is of no value in diagnosis. As the sinus may be absent or undeveloped, C. advises very careful investigation before operative measures are undertaken. In making such investigations, if necessary, he dislocates the middle turbinal laterally by means of a delicate raspatory; if this is insufficient, both anterior and posterior portions are excised. For enlarging the ostium and removing the anterior wall of the sinus he uses an enchondrotome, consisting of a sliding chisel playing against a fixed one with a handle, the former being provided with a ring for the index finger. The chisels can be turned in all directions and an opening may be made in the anterior wall without regard to the ostium if the latter be not found. Under cocaine the operation is almost painless, and under the eye is free from danger. The after-treatment consists in irrigation and insufflation with various medicaments.

G. E. Shambaugh (Chic. Med. Rec., June) presents a case of empyema of the sphenoid sinus in a woman forty years old, in which none of the other accessory cavities were involved. She had had a thick purulent discharge from the nose for at least ten years, the discharge latterly, however, having passed into the naso-pharynx more than through the anterior nares. Patient had frontal headaches and a dry pharyngitis. Greenish crusts are always found between the middle turbinated body and the septum, and in no other part of the nose. The conformation in this case must have been peculiar or the atrophy very great, as the opening of the sphenoid sinus could be readily seen on removing the crusts. The ordinary description of the disease and treatment are given.

NASO-PHARYNX.

Malherbe (abst. 2, Apr.) does not believe that post-nasal catarrh is always the result of chronic rhinitis, but that it is frequently a disease on its own account and dependent on the presence of abnormal hypertrophy of the pharyngeal tonsil. He believes the only proper treatment in many cases is thorough curettement under anesthesia and subsequent cleansing. [This view agrees with the experience of the Editor in many cases.]

- G. F. Hawley (7, Nov. 19, '98) in an article on *post-nasal catarrh* maintains that a much larger proportion of cures can be attained if proper means of cleansing and applying medicine to the space be used. Such a means he offers in the use of an atomizer, with so small a tube that it may be inserted through any nose of ordinary lumen. With this the post-nasal space may be thoroughly cleansed and treated.
- L. Browne (17, Aug. 26) alludes to the statement made in his text-book that a naturally small naso-pharynx is much less likely to be the seat of disease than is a large, roomy pharynx, and the consolation to be derived from such fact in the case of the small naso-pharynx in which a satisfactory examination is very difficult to make. Exception being taken to this statement (9, Apr. 15, p. 914) he investigated as to the experience of others and found that it largely agreed with his own. He finds anatomical confirmation of his observations in the report of Gerber (abst. 2, Mar.), who found in one hundred cases of ozena that the average length of the septum was three mm. less than normal and that the naso-pharynx was correspondingly increased in size.
- J. R. Fritts (125, Feb.) records two cases of bony occlusion of the posterior nares and collates seventeen other cases from literature. Scheppegrell (3, May) in abstracting the article, adds two cases of his own, making a total of twenty-one cases.

Tumors.—D. A. Hengst (136, '98) reports a case of sarcoma in the naso-pharynx in a boy fourteen years old. A radical external operation was successfully performed, but rapid recurrence took place and the patient died twenty-five days after.

- O. L. Smith (28, Nov., '98) reports a case of fibro-sar-coma in a man of twenty-six, which had existed for three years. The tumor was removed en masse under chloroform. Loeb (136, '98) reports a case of fibroma in a girl thirteen years old. The growth completely filled the nose and pharynx. Operations by electrolysis and the hot snare were done during a period of more than a year with final perfect cure.
- E. F. Ingals (6, Dec. 16) makes a supplementary report on a case of *fibrous tumor*, which he had removed fifteen years previously, when the patient was thirteen years old. Ingals had been unable to remove a small part of the growth which was attached to the vertical plate of the palate-bone. For a year after operation the tumor continued to grow, closing the right naris completely and destroying the sight of the right eye. After reaching this stage the growth continued without change for some months, and then gradually decreased in size until four years afterward, when it seemed to entirely disappear. Ingals considers the case especially interesting, as illustrating the tendency to recurrence of fibrous growths in early life and the tendency to cease growing, and even to atrophy, in early adult life.

Pierre (81, July; Aug. '98) records the case of a man thirty-two years old with *lympo-sarcoma* of the naso-pharynx. The chief symptom was pain in the ear. A tumor looking like an adenoid growth projected from the left Eustachian eminence. The growth was removed as adenoids, but a microscopic examination revealed its nature. Recurrence and death took place within two months. Weil (78, Jan. 26) and Max Thorner (70, Jan. 21) each reports a case

of enormous polyp of the naso-pharynx, the former gives the dimensions as four and one-half inches in the longest diameter, with weight of one and one-half ounces, the latter gives two and three-fourths inches and one and five-eighths ounces.

THE PHARYNGEAL TONSIL.

From a study of the literature of the year it is easy to see that the subject of post-nasal adenoids continues to be one of the most important coming within the scope of the specialist in nose, throat and ear. The tendency in operating is perhaps to be too radical in the removal of lymphatic tissue, and it is altogether likely that within a few years the more conservative operation will be much more in favor. It is well to bear in mind that it requires something more than adenoids to develop the typical "adenoid face." Everyone has seen many mouth-breathing children who practically never use the nose as a respiratory organ in childhood, and yet possessed regular and handsome features in adult life, after the adenoids had atrophied and nasal breathing became possible. Two deaths have been reported from the operation in the United States, and several cases of severe hemor-No such cases have come to the Editor's notice in the European reports for the year.

Operation.—In a discussion by Cox, Straight, Cline, Thorner, Myles, Quinlan and Logan (Trans. Am. Laryn., Rhin. and Ot. Asso., '98), while Cline advocated gradual removal with cocaine at several operations, the rest were practically as one in operating with a general anesthetic at one sitting. The general opinion seemed to favor a very radical operation, but Myles said that many times tissues removed as adenoid and submitted to the microscope showed muscular fiber, fibrous tissue, and sometimes periosteum.

In a discussion before the laryngological section of the Am. Med. Asso. (7, Nov. 18), Lautenbach and Baker favored operation without anesthesia, the former using the finger nail, natural or artificial. Mayer, Stucky, Keller, Quinlan, Cobb and Rogers favored general anesthesia. Mayer objected to the use of the finger even in making a diagnosis, claiming it to be unnecessary.

E. Pynchon (Med. Monog., Feb.) enters into a full consideration of the subject of pharyngeal adenoids in all its bearings. In operating in the ordinary case he uses bromide of ethyl as an anesthetic and a modification of Gottstein's curette. Where removal of the faucial tonsils is required at the same time, he prefers chloroform and a more thorough operation than is possible under the brief anesthesia of ethyl bromide, using first the Gradle forceps, then a smaller pair, and finishing with the curette. He believes the danger from chloroform is nearly always due to improper administration or impurity of the article used.

D. B. Delavan (6, Oct. 29, '98) advocates bromide of ethyl, complete anesthesia and blunt forceps for an ideal operation. Scheppegrell in abstracting the article very properly criticises the blunt forceps.

[The Editor's experience is that with a sharp Gottstein curette the operation can be done with the greatest ease and least hemorrhage. In older children, cocaine anesthesia, and one stroke with a sharp curette, will bring away the tonsil with practically no pain and in one large piece, any accessory lymphatic tissue in the fossa of Rosenmuller being attended to several weeks later if it be then present.] H. Gradle has perfected an adenotome which is a very ingenious and serviceable instrument, but a sharp curette will accomplish the same result in much less time, and is not so large an object to introduce. C. C. Rice (70, April 1), in operating, curettes until the surface feels smooth, and insists upon the necessity for thoroughness to get good results and to prevent infection.

Treatment by Antitoxin.— Becigneul (abst. 2, April) reports the case of a child, aged seven years, with large pharyngeal tonsil, suffering from staphylococcic diphtheria. Antitoxin was injected before a microscopic examination was made. After injection the adenoids grew rapidly smaller and the child regained nasal respiration, having been a mouth-breather before the attack. Heurtaux (ibid) tried the same treatment in another child with adenoids, but having no acute disease, and the adenoids disappeared in three weeks and deafness from which the child suffered was cured.

Hemorrhage.—W. A. Martin (I, July) records three cases of severe hemorrhage following adenoid operations, in patients aged 16, 7 1000 Means. In the 7-year-old there was little hemograge the first day, the most dangerous loss occurring the fourth day after the operation. [As M. speaks of tearing the tonsil loose with the Gottstein curette, it seems likely that a dull instrument was used.]

Stucky (3, May) reports a trial case of hemorrhage following an adenectomy and tonsillotomy (one tonsil only). the adenoids being removed with a Gottstein curette and the tonsil with a tonsillotome. The patient was a boy of 15 years, who had had sore throat, tonsillitis and quinsy for more than There was still a purulent discharge from two weeks. around the tonsil, and the pharyngeal tonsil was also covered with an offensive discharge. The temperature before operation was 101° F. The hemorrhage was not excessive at the time of operation. Two hours later secondary hemorrhage occurred, but apparently not of an amount sufficient to cause death. Death occurred nine hours after operation, although the hemorrhage was easily controlled and subcutaneous use of normal salt solution was resorted to. result would probably not have occurred except for the previously exhausted state.

F. W. Hinkel (6, Oct. 29, '98) reports a case in which death immediately followed an operation for adenoids under

chloroform in a boy of 6 years. The period of administration of the chloroform was rather prolonged by vomiting of a heavy meal taken five or six hours before, and from interruption of respiration by spasm of the glottis several times. The author appends a statement of eighteen cases of death from chloroform narcosis for removal of pharyngeal or faucial tonsils, or both. His conclusions are: I. show an exceptionally high mortality from chloroform anesthesia in the operation for the removal of lymphoid hypertrophies of the pharynx. 2. The observations of Viennese pathologists show that sufferers from adenoids frequently belong to an abnormal constitutional type that has been found peculiarly susceptible to chloroform narcosis. of the statistical and pathological data presented, the general use of chloroform in operations for hypertrophied tonsils, faucial or pharyngeal, is inadmissible.

Etiology. — C. C. Rice (70, April 1) ascribes the origin of adenoids in 90 per cent to nasal catarrh. Audat (11, Jan. 28), in an article on rhino-pharyngitis in children, also takes the view that adenoids are oftener the effect than the cause of this disease.

Recurrence.—Rudloff (1. Oct.), in 700 radical operations for post-nasal adenoids, notes recurrence in 3½ per cent.

The Pharyngeal Tonsil in Diphtheria.—Plottier (I, Aug.), in an investigation of the bodies of thirty-eight children dead of diphtheria, with reference to adenoids, found 50 per cent so affected. He reaches the very natural conclusion that the presence of adenoids adds considerably to the gravity of cases of diphtheria. He thinks it likely that in many cases of diphtheria the adenoids are the first points of infection. He concludes a lengthy article by insisting that every diphtheritic patient be examined by palpation for adenoids on account of the gravity which their presence adds to the case. [Such a practice would probably meet

with the hearty disapproval not alone of the general practitioner who sees most of the cases of diphtheria, but also of the specialist.]

General.—L. Browne (2, June) calls attention to adenoids as a causative factor in laryngeal papilloma of children, and asks for confirmatory observation in this line.

Epithelioma.— Tilley and Thompson (2, April) each reports a case of epithelioma of the pharyngeal tonsil in patients aged respectively 34 and 35 years.

Cervical Lymphoma.—Jessen (129, Sept. 2) has found a number of cases in which there were large masses of lymphatic glands in the neck which had resisted all ordinary methods of treatment, yet which disappeared promptly after the removal of adenoids from the nasopharynx. He concludes that the connection between these conditions is often overlooked because of the noninterference of the adenoids with nasal respiration. He finds that the soft, rather than the hard, variety of adenoids is likely to be the cause of the trouble, while this is the form which is less likely to embarrass nasal respiration.

PHARYNX.

J. E. Newcomb (1, Feb.) in a paper before the New York Acad. of Med. reported two cases of obstruction to nasal breathing, caused by undue prominence of the anterior arch of a cervical vertebra. In the discussion following, Mayer, Simpson and Quinlan each reported one or more cases of the same character. Mayer spoke of a case in which the cautery had been used with very unpleasant results. In case of adenoids associated with such a condition the adenoids should, of course, be removed, but caution should be observed in the prognosis given to the parents, so

that not too much improvement might be expected. [In a case of this character in a male adult treated by the Editor, the chief discomfort was a very obstinate naso-pharyngitis, the treatment of which was very difficult by reason of the obstruction.]

- G. E. Brewer (29, Dec., '98) reports a case of fatal pharyngeal hemorrhage which occurred in a vigorous young man with an apparently ordinary sore throat. The hemorrhage seemed to come from rupture of a small abscess on the posterior surface of the palate. Several attacks occurred within 24 hours, the last proving fatal. Menzel (14, Dec. 8, '98) describes a case of pemphigus of the mucous membrane of the nose, mouth, pharynx and larynx without invasion Frequently recurring attacks had brought of the skin. about a cicatricial condition of the laryngeal entrance. The vesicles form first, but burst in a few hours. Upon the denuded spots appear white sharply defined deposits consisting exclusively of fibrin with mono- and poly-nucleated leucocytes buried in its meshes, hence true exudative membranes.
- C. F. Theisen (7, Aug. 12) reports two cases of tuberculosis of the pharynx; one in a man of 21, with extensive lung involvement but little laryngeal trouble, ran a rapid course, the patient dying in two weeks. The other in a woman of 22, was not so bad, but lungs and larynx each showed involvement. The ulcer of the pharynx healed under lactic acid and orthoform, and the general condition improved.
- Shaw (9, Oct. 22, '98) reports a case of *epithelioma* of the pharynx in a woman aged 30. A swelling the size of a nut was located in the posterior wall opposite the epiglottis. There had been soreness for ten weeks, but no other pain and no loss of flesh. Death occurred two months later without operation.

Grant (2, Sept.) records a case of *epithelioma* in a man 58 years old.

Emma E. Musson (7, Nov. 25) reports a case of granulomata of the pharynx due to glanders in a woman 54 years old. The disease existed in a chronic condition for four years, when an acute infection was lighted up, from which there seemed to be full recovery. The tonsillar hypertrophy was for some time thought to be sarcomatous and was so pronounced by microscopists, but finally detection of the bacillus mallei led to the proper diagnosis. Operative measures for the removal of the tonsils and granulomatous masses were finally successful, although the last operation lighted up an acute glanders.

J. O. McReynolds (7, Dec. 2) reports a case of "chronic recurring membranous pharyngitis" in a girl 19 years old. He objects to the name "chronic diphtheria" applied to the affection by M. Mackenzie, basing his objection on the clinical history and the absence of the K.-L. bacillus. In his case the membrane recurred two or three times a week when no treatment was used, each time covering at least the soft palate and sometimes the entire pharynx, and exfoliating in one or two days. When removed by force a raw, easily bleeding surface was left. The daily ingestion of raw onions or local applications of strong solutions of iodine or nitrate of silver would prevent recurrence for two weeks, but he has as yet found no permanent cure, although expecting spontaneous cure in time.

Garel (77, July, '98) says that every patient suffering for more than three weeks without interruption with pain in the back of the throat should be considered syphilitic. He mentions as other causes of dysphagia of long duration, calculus of the tonsil, chronic encysted abscess of the tonsil, acute miliary tuberculosis of Isambert, and cancerous tumors, but regards them as exceptional and of insignificant frequency compared to syphilitic complications.

Saenger (13, Feb. 21), after careful experimentation with a view to determining the value of gargles, reaches the

conclusion that few persons are able to bathe the parts back of the anterior faucial pillars by gargling, and hence that gargling is not to be depended on to cleanse the tonsils or oropharynx. [The above article has been widely quoted, and, not being refuted, has brought gargling somewhat into Anyone who can look into his own mouth when the pharynx is in position for gargling will see that the middle third of the oropharynx is in view, and that the tonsils, if he has any, are brought into great prominence. tonsils are thoroughly bathed in gargling except the part at the extreme upper part of the faucial angle, and this cannot be reached save with an applicator. The part of the pharynx lying just behind the posterior faucial pillar on either side cannot be reached by a gargle, neither can it with a spray in the average individual who gags when being sprayed. Not every person can gargle the throat, but probably four out of five can do so, and those who cannot are usually ready enough to say so. Anyone who has sprayed the tonsil or touched with a swab and loosened up bits of exudate, and then had the patient gargle to remove the loosened portions, is well aware of the effectiveness of the procedure. doubtedly the thorough application of the spray will cleanse the oropharynx and fauces better than gargling, but one who sees the manipulation of the atomizer in the hands of the mother or other member of the family very soon learns that it is not much more to be depended on than the gargle in adults or children old enough to gargle. Anyone who has used a soothing gargle even in mild acute laryngitis is well aware of the benefit derived, even though he knows that no part of the fluid reached the larynx. Experiments by the Editor with methyl blue demonstrated that the greater part of the tonsils and the middle third of the oropharynx reached in gargling, though he had demonstrated a thousand times clinically.]

Branchial Fistula.—Nieny (122, Feb.) reports a case in a girl two years old. The external opening was three cm. from the median line and two cm. above the sterno-clavicular joint, the internal at the lower edge of the pharyngeal tonsil. The case was cured by dissecting out entire.

Rheumatism.—Monmarson (138, May 14) describes three cases of rheumatism of the pharynx representing two distinct forms—diffuse and local. The diffuse form extends laterally to all the pharyngeal muscles. The cervical vertebræ are also in all probability affected. In the localized form the inflammation affects the articular surfaces and the fibrous periarticular tissue. There are no objective symptoms, but there is usually severe pain, especially on swallowing. For treatment he found iodine satisfactory. Ross (136, '98) reports a case in a physician in whom an attack of pharyngitis seemed to usher in an attack of general rheumatism five days after the onset.

Gout.— Le Clerc (Normandie Med., Dec. 15, '98) reports a typical case of *gouty angina* in which, with symptoms so severe as to almost call for tracheotomy, all discomfort in the throat disappeared with a sudden attack of gout of the great toe.

Pharyngo-Mycosis.—Price-Brown, in a paper (25, Vol. 7, No. 4), reports four cases of this disease, two in men and two in women. He thinks that the fungus only becomes attached and grows in the pharynx when the general health is not good. He agrees with the authorities generally that the galvano-cautery is the best treatment.

Good results have been reported from the use of a 25 per cent solution of *pyoktanin* rubbed into the masses twice or thrice weekly. Germicides in general seem to have little effect. Myles gets best results by *excising*. Loeb

never saw a case in which the lingual tonsil was not also affected.

Wingrave (2, Oct.) cured a case with a saturated solution of *salicylic acid* in alcohol in weekly treatments after one year's failure with chromic acid, galvano-cautery, etc.

LARYNX.

Recurrent Paralysis.—Kuttner and Katzenstein (5½, Vol. ix., p. 308; trans. by C. Loeb, 3, May) have done some very thorough experimental work to determine the relation of posticus paralysis to the action of the vocal cords, and to determine the innervation of the larynx during breathing. Grossmann, from his experiments on dogs, concludes that the clinical median position of the cords has nothing whatever to do with posticus paralysis. K. and K., after careful repetition of G.'s experiments, claim that the position of the vocal cords in animal experiments after section of the recurrent larvngeal is very different from the clinical median position to which, according to Grossmann, it should be analogous, and that, therefore, every conclusion based on the asserted congruence of both laryngeal pictures They support Grossmann, however, in the folis fallacious. lowing conclusions: I. The vocal cord, robbed of its musculus posticus, cannot be abducted to the same degree as before; the maximum of abduction is now nearer the median line than before. 2. During quiet respiration the respective vocal cord is not abducted beyond the cadaveric position, as is the case after section of the superior laryngeal nerve. forced respiration the outward movement goes beyond this measure. 3. Animals in which both postici are removed do not show the median position and do not die of suffoca-In quiet attitude the respiration is audible, but not During motion or psychic irritation dyspnea sets in, which, with complete median position, may cause suffocation. 4. The mode of movement of the vocal cords, robbed of their postici muscles, suffers no variation at all even if the animal is kept alive as long as a year after the operation.

They cannot notice any approach of the vocal cords to the median line, any interference with adduction or abduction, and any median position. Notwithstanding these conclusions from their animal experiments, they still adhere to Semon's law and explain that some element enters into the clinical case which they are not able to introduce in the dog. They illustrate this by a very interesting tabetic case which Kuttner was able to observe in his clinic. They finally conclude there actually is a simple, uncomplicated posticus paralysis and that only the question of the nature of the complicating factor requires further elucidation. mental facts of Semon's law, against which Grossmann contends, have been proven correct, and thus falls every objection to the theory which Semon deduced. In the matter of the innervation of the larynx during breathing, however, K. and K. differ with Semon. They claim that in the majority of individuals the vocal cords do not stand still during quiet breathing, in men as well as in dogs both adductors and abductors being innervated during breathing. During inspiration the innervation energy of the abductors increases; during expiration that of the adductors.

They give detailed argument to prove their position and describe the experiments which they made on dogs during their investigations.

Macintire (2, Aug.). The experimental work of Krause and Grossmann has served to throw doubt on the law of Semon that lesions of adduction are due to what are ordinarily called functional causes, while early loss of abduction points to organic and more serious difficulty. Macintire remarks, however, that it will take more than demonstrations on the larynx of the dog to overthrow the confidence which long clinical experience has led the laryngologist to place in

the classification made by Semon. The larynx of the dog lacks so much of the high development of the human larynx that conditions in the former cannot overthrow the clinical experience in the latter. Only careful pathological study in the human larynx can do this.

Burger (127, B. ix., H. 2.) believes that the physiologic and clinical facts known to this date show that the dilators are more liable to disease, and thus confirm Semon's law. Semon (118, Jan.) thinks it not likely that laryngeal paralysis is ever due to a unilateral cortical lesion. (2, Mar.) reports a case of recurrent paralysis from carcinoma of pharynx in which enlarged glands pressing on the recurrent nerve were demonstrated by the X-rays. Griner (abst. 2, Apr.) gives a good critical review of the subject and concludes that recurrent paralysis is grave because it is the ordinary manifestation of serious and often incurable disease. Lermoyez (126, April, '98) reports a case of r. p. of twentyseven years' standing in a woman of 30, dating back to an attack of measles in the third year. Examination of the chest indicated the presence of some induration in the upper part of the thorax, due to the adenitis of the tracheo-bronchial glands. Baurowicz (127, B. ix., H. 2.) reports a case of posticus paralysis from syringomyelia, this being the third case of the kind reported. Several cases of laryngeal paralysis due to influenza have been reported (2, Aug.). The prognosis is usually good.

Courtade (abst. 2, Dec.) describes a case of aneurysm of the aorta in a man of 45 in whom the symptoms were very like those caused by paralysis of the abductors. Respiration was easy during rest, but dyspnea came on from any exertion. The trouble was caused by compression of the trachea, the nerves being unaffected.

One case of recurrent paralysis from stricture of the esophagus has been reported by Bowlby (2, May) and two by Beale (2, May) from the same cause.

- O. T. Freer (137, Apr.) presents a case of aneurysm of the aorta in a woman of 60, accompanied by paralysis of the left recurrent laryngeal nerve and tracheal stenosis. The laryngeal trouble had only become apparent within six weeks. The literature of the subject is presented.
- W. Porter (6, Dec. 9), in a paper on the carly diagnosis of aneurysm of the arch of the aorta, alludes to the importance of the laryngeal symptoms. The pressure at the beginning may not produce aphonia, but be only sufficient to produce laryngeal irritation and cough with resulting hoarseness, the laryngeal image in the mirror appearing normal except for the congestion. Casselberry, in discussing the same subject before the Chicago Medical Society, spoke of a case in which he had thus been able to diagnose aneurysm when the general practitioner, referring the case to him, had not suspected its presence.
- G. T. Ross (170, July, abst. 2) gives the history of an interesting and unusual case of laryngcal paralysis in a man. The man lived amid very poor hygienic surroundings; was a chronic alcoholic, and had a family history of tuberculosis. There was a chronic catarrhal condition of the respiratory passages from the nose to the larynx. The anterior half of the vocal cords were immobile, the anterior commissure remaining open during phonation, while in the posterior half motion was normal. There were no tabetic symptoms. The aphonia had existed for three and a half years. The condition was one of paralysis of the abductors of the anterior half of the vocal cords.

Operation.—H. Schroetter (14, No. 40, '98; abst. 2, Jan.) reports an interesting *endolaryngeal* operation. The case was one of left recurrent paralysis of many years' standing in a man aged 26. Laryngoscopic examination showed a smooth tumor about the size of a hazel nut with a broad base springing from the left aryepiglottic fold and region of the left ary-

tenoid, so that only the anterior third of the cords could be seen. Under cocaine the tumor was removed with the electric snare, with immediate relief and little hemorrhage. The part removed consisted of Santorini's cartilage with its mucous covering.

Lichtwitz (abst. 2, Mar.), a case of double prolapse of the ventricle of Morgagni. The left side was first affected and the prolapsed part was removed with cutting forceps under cocaine. The right side developed the same condition two months later, and the same operation was done. The voice was left normal, but sometimes there was pain in the throat.

Lodge (8, Feb. 4) reports a case of double abductor paralysis in a boy of 14 years, with a history of difficult breathing for seven years. The thyroid gland was enlarged Medical treatment failing, the isthmus of the thyroid was removed. Improvement began after six months. The goiter disappeared and the larynx became normal ten months after operation. The history of similar cases in literature is given in the article.

Spasm of Tensors.—J. E. Rhodes (6, Feb. 25) reports five cases of spasm of the tensors of the cords. The spasmodic contraction occurs on every attempt at phonation. He believes the disease is of neuropathic origin, probably located in the motor areas of the medulla.

The essential diagnostic points are the nearly perfect condition of the parts on laryngeal examination, with the spasmodic action on phonation and the characteristic voice.

Chorea.—J. A. Stucky (3, Aug.) reports a case of laryngeal chorea in a woman of 23, which had lasted and grown worse for four or five years. The cough occurred even during sleep, unless the patient was narcotized. There was hypertrophy of the inferior turbinals, but as the nasal passages were roomy there was little obstruction and no apparent need of operative interference. Cure finally resulted, however, from cauterization with chromic acid.

Eversion of Ventricle.—E. F. Ingals (7, Feb. 18) reports a case of eversion of the ventricle of larynx and a cyst involving the larynx and side of the neck. Two ounces of mucilaginous semi-transparent fluid were removed from the cyst by means of an aspirating needle. Three-fourths dram of a mixture of equal parts of carbolic acid and glycerine were injected through the same needle and allowed to remain several minutes. Cure resulted.

Noack (11, Oct. 29, '98) maintains that spontaneous eversion of the mucous membrane of Morgagni's ventricles is not possible on account of fixation of this membrane to the underlying structures. Acute inflammation of the mucous membrane of the lower parts of the ventricular bands may look like an eversion. The so-called eversion is due to a tumor which originates in or on the mucous membrane.

H. Schroetter (19, Oct., '98), a case of air tumors in the larynx caused by the ventricles of Morgagni being inflated by the expiratory air stream. During inspiration the swellings would collapse. Operation for relief consisted in removing parts of the false cords.

Angioneurotic Edema. - Damiens (abst. 2, Jan.) reports a case which came on suddenly in a healthy man of 60 while walking along the seashore. In the course of 24 hours in spite of treatment the mucous membrane of the mouth, pharynx and larynx became so edematous that intubation became necessary. In a few minutes a larger tube was inserted and within fifteen minutes from the time of insertion of the first tube the second tube was coughed up and recovery rapidly ensued. The absence of fever, pain and any morbid process in the larynx and the rapid course of the affection caused D. to rule out any infectious, constitutional or mechanical cause. He therefore attributes the symptoms to vaso-motor disturbance and advances the theory of spasm of the vaso-dilator nerves. The disease may readily prove fatal if not promptly cared for.

Uchermann (50, Jan. 8) reports a case of edema of the larynx due to the menopause in a patient 53 years old. A small gelatinous tumor remained on the summit of the arytenoid after the edema disappeared. This tumor finally disappeared, to return at each menstrual epoch. U. considered the swelling to be an angioneurotic edema.

Urticaria.—W. Freudenthal (6, Dec. 31, '98) reports a case of what he considers to be *chronic urticaria* of the larynx. It was associated with obstinate urticaria of the skin. A spray of a twenty per cent solution of menthol in oil gave best results.

Pemphigus.—J. H. Bryan (6, Nov. 25) reports a case of pemphigus chronicus vulgaris of the larynx and mouth. The symptoms complained of by the patient were in the region of the larynx and rather indefinite and had existed six months. A whitish membrane was present on the laryngeal surface of the epiglottis, easily detachable and leaving a red surface, but no loss of substance. First, one-half the epiglottis and then the other would be involved, the one part appearing normal while the other was affected. Fowler's solution to toleration acted well in the case.

Mycosis.—Gray (92, Mar.) reports a case of mycosis of the larynx, the deposit being on the upper surface of the left arytenoid. Mouth, pharynx and naso-pharynx were free. Under creosote and menthol inhalations the deposit cleared up. G. thinks from the history that there had been rheumatism of the larynx and the mycosis was superadded.

Perichondritis.—G. L. Richards (136, '98) reports two cases. One was in a man of 60, who was suffering with epidermoid carcinoma. The other was in a man of 50, a primary perichondritis from exposure. Tracheotomy was done in both cases. The first survived five months; the second, three days; the latter dying of septic pneumonia.

The cancer case gave a doubtful history of syphilis and seemed to improve under iodides in large doses. There was almost no pain at first, even after the swelling was marked enough for dyspnea. R. concludes that perichondritis affecting the inner surface of the larynx is almost certainly fatal, while if only the external surface is involved recovery may take place.

Laryngitis Sicca.—Avellis (19, Nov.) has seen six cases of typical laryngitis sicca in pregnant women, in whom the disease appeared at from the second to the fourth month of pregnancy, disappearing after confinement and reappearing in subsequent pregnancies. Treatment with a spray of warm fluid mentholized vaseline gave satisfactory relief; hot soups and drinks were also advised. Astringents and curetting are to be avoided in such cases.

TUBERCULOSIS OF THE LARYNX.

The tone of the literature on tubercular laryngitis is gradually growing more hopeful, and the number of cases of undoubted tubercular character reported cured is mounting to quite a good figure.

Pathology.—Horne (2, Oct., '98) finds under the microscope that the earliest changes in tuberc. laryngitis take place in the lymphatics. These changes consist of a proliferation of the parenchyma of the acini and ducts with formation of masses of small round cells distending and choking the ducts and obliterating the glands. The tubercular process begins in parts rich in lymphatics, i. e., interarytenoid space, posterior third of the cords, ventricular bands and epiglottis.

Magenau ($5\frac{1}{2}$, B. 9, H. 2) has collected statistics of 400 cases of laryngo-pulmonary tuberculosis with a view to testing Krieg's theory that the infection is through the lymph

and blood circulation from lung to larynx and not by respiration or sputum. Krieg's statistics showed that in pure unilateral disease of both lung and larynx, in 91.6 per cent the same side was involved. Magenau's cases tabulated in the same way show only 40 per cent and he concludes that some other method of proof will be necessary before Krieg's theory can be accepted.

Prognosis.—R. Levy (7, Sept. 16) gives his results in 144 cases of laryng. tuberc. treated in Denver. They are much more favorable than those of other specialists at the lower altitudes, as was developed in the discussion (Laryng. Sec. A. M. A.), in which G. L. Richards, S. E. Solly, H. W. Loeb, W. Duffield, H. S. Straight and F. J. Quinlan participated.

In 86 infiltrative cases, 26 died, while the remainder were either cured or improved at the time of report. Of 60 ulcerative cases, 37 got worse or died, the remainder being improved or cured. In those cases not involving the epiglottis or aryepiglottic folds 10 per cent got worse or died, while of those in which those parts were affected the mortality was 70 per cent. In his cases in which syphilis was a complication it seemed to exercise a favorable influence on the course of the disease.

In harmony with this latter observation is Newcomb's report (1, Feb.) of a case in a patient forty-six years old, who had had syphilis twenty-five years previously. This patient had had cough and hemoptysis for four years, and during six months in which he was under observation the laryngeal disease grew no worse.

On the other hand, E. N. Smith calls attention to the danger of *sudden death* in cases of mixed tuberculosis and syphilis of the larynx, and reports a case.

Treatment.—The use of lactic acid, with curettement in suitable cases, seems to continue the favorite active

treatment, although other remedies show good results and have ardent advocates.

- Lake (2, Feb.) gives his treatment of laryngeal tuberc. In granular and superficial excoriation or ulceration he uses intratracheal injections. In edema and superficial ulceration, scarification or curetting, followed by lactic acid or formic aldehyde. In extensive and deep ulceration active treatment is contraindicated, iodoform and orthoform are used till the parts become more tolerant, when formaldehyde may be used. He regards orthoform as very efficacious in dysphagia. For intratracheal injection he uses lanoline, containing 3 per cent of napthaline.
- G. L. Richards (7, Mar. 4) uses paramonochlorophenol in 4 to 10 per cent solution in glycerine and water, as an application, and thinks it increases the action of the lactic acid.
- T. J. Gallaher (7, Mar. 4) has used formaldehyde in the treatment of tubercular laryngitis for two years with great satisfaction. He believes it to be the most useful treatment, in both ulcerative and infiltrative types. He concludes his paper with the following statements:
- I. It is safe to allow the patient to use a mild solution of I to 500, two or three times a day. 2. The relief to the dysphagia is very marked, and in many cases formaldehyde is a good substitute for cocaine. 3. Its most brilliant results are to be seen in the vegetative and ulcerative types. 4. It is the most satisfactory remedy I have ever used in infiltrative cases. 5. The results from the use of formaldehyde are probably due to its effect upon histologic tissues, as well as upon the bacilli themselves. 6. The stronger solutions, from I to 10 per cent, should be applied two or three times a week, as deemed expedient.

In the discussion following Richards' and Gallaher's papers (7, Mar. 4), J. H. Coulter expressed his preference for *guaiacol* in the local treatment, having found formaldehyde

unsatisfactory after a brief trial. C. uses the guaiacol in strengths of from 5 to 100 per cent, using it as strong as the patient can stand without pain. Under its use the ulcers usually heal quickly, and often an anesthesia lasting eighteen to twenty hours is produced. E. Mayer stated that his experience with paramonochlorophenol alone had been unsatisfactory. He objected to the curette and other operative measures on account of the discomfort to the patient and the danger from opening a fresh nidus for infection, and because the results of operations in this country were not good enough to warrant them. He had found absolute alcohol very satisfactory in the proliferative forms of the disease.

Berens (1, Aug.) reported a well developed case of tuberculous laryngitis in a man of forty-six without lung symptoms, in which he used submucous injections of creosote, followed by curetting and application of pure mono-ortho-chlorphenol. After this he used pure ichthyol, locally, daily for three months, and on alternate days for six months, with occasional touching with mono-ortho-chlor-phenol for unhealthy granulations, the final result being a perfect cure. Stoker (2, April), after speaking of the present unsatisfactory treatment of the disease, suggests that a culture be made from the seat of disease, a stream of oxygen passed through this and the oxidized toxins applied frequently to the diseased parts.

E. B. Gleason (7, Nov. 25) cites a case of tuberculous laryngitis in which excellent results were obtained from the use of *orthoform*. A young man, too weak to walk, was brought to his office suffering with such a degree of ulceration of the larynx that he had been unable to eat for a week on account of the dysphagia. Under the use of orthoform powder twice daily, he was immediately able to eat, and the ulcer healed in a short time without other treatment.

W. Scheppegrell (136, '98) reports a case of perichondri-

tis and necrosis of the arytenoid cartilage, probably due to tuberculosis, although not demonstrable, in which after repeated use of the cold snare without checking the process, the use of the electric cautery brought cure. S. finds the *electric cautery* very useful, even in the larynx, but the electrode must be very fine and the patient well trained.

Gerber (2, Mar.) operates in only a few cases in which the disease is localized and the general condition is good. He reports only one cure in two hundred cases.

Freudenthal (I, Mar.) gives the results in twenty-nine cases in which he had used the *curette*. In eighteen there was no improvement, in seven no immediate relief, in four improvement was almost immediate. In advanced cases, as were thirteen of the eighteen unimproved, the operation seemed to aggravate. F. reports favorably on orthoform in powder, and also in emulsion. He also finds heroin very satisfactory in small doses for the cough.

Lavrand (11, No. 21) claims success, after failure with other methods in the treatment of tubercular dysphagia, with a new microbic product derived from Koch's bacillus. He administers the remedy in fifteen-drop doses internally, with relief of the pain and also with benefit to the tubercular disease in the larynx itself. He has found it harmless and of decided benefit to the general health. Full particulars as to preparation and physiological action will appear later (abst. 4. Oct.).

Lupus.— Donelan (2, Feb.), in an article, on the subject advocates dropping the term, lupus of the larynx, and substituting therefor laryngeal tuberculosis in every case. The proposition receives some support, but it is not at all general.

Massei (2, Jan.) reports a case of typical lupus of the larynx in a child of ten years, in which some time previously a diagnosis of syphilis had been made by a competent dermatologist on account of the skin lesions present.

Hemorrhage.—Straight gives the history (136, '98) of two cases in which only the larynx seemed to be involved. Case 1. A healthy appearing man, thirty-seven years old, who had suffered from hemorrhages at intervals for fourteen years. There were no other abnormal symptoms. blood vessels of the larynx, epiglottis and base of tongue were engorged. No bleeding point visible. The hemorrhage was very likely to follow singing. Treatment with a 10 per cent nitrate of silver spray relieved, and seemed to reduce the congestion to a considerable degree. Case 2. Man aged thirty-five, who had had hemorrhages at intervals for sixteen years. His health was good and there was no rise of pulse or temperature during eighteen months' observation. was nothing abnormal in the larynx, except a bleeding point in the anterior third of the left vocal cord. A flow of blood from this point was visible. Treatment seemed to be of no avail. The patient went to New Mexico and after six months died from hemorrhage. No symptoms of lung disease ever A general discussion by the members (Am. Laryng., Rhin. and Otol. Soc.) revealed the opinion that most cases of apparent laryngeal hemorrhage are in reality tubercular and from the lungs. The lingual tonsil should always be carefully inspected. In the matter of treatment the use of I to 2 per cent nitrate of silver sprays is advised, and surgical attention to the faucial and lingual tonsils and varicosities if present.

MEMBRANOUS LARYNGITIS.

The same difference of opinion obtains as to this disease as in membranous rhinitis, that is as to whether there is a disease other than diphtheria which produces a fibrous deposit in the larynx. Sainsbury (8, Oct. 8, '98) gives the particulars of a case in a child in which bacteriologic examination of the

pharynx and membrane from the larynx showed no K.-L. bacilli. There was no albumin in the urine, no paralytic sequelæ and no history of contagion. Tracheotomy and intubation were resorted to and recovery ensued.

Grimes (8, Aug. 13, '98) reports a similar case in a boy four years old recovering from measles. There was no exudation on the tonsils or in the pharynx. Repeated examination showed no diphtheria bacilli. Intubation was necessary, but there was complete recovery.

NEW GROWTHS.

Papilloma.— Halsted (Trans. Am. Laryng., Rhinol. and Otol. Asso., '98) gave details of two cases, one in a woman of thirty-four and one in a girl of three, in which endolaryngeal removal of papillomata of the larynx was speedily followed by recurrence. Frequent operations were done, and absolute alcohol used without relief in the child. In the adult after about nine months' active operating and treatment with absolute alcohol the disease seemed conquered. The growth in each case seemed much stimulated by operation. In the discussion Solly and Roe reported very favorably on the use of absolute alcohol, while Richardson, Levy and McKernon had seen very little benefit from it, although each had used it in several cases. The general experience was that laryngeal papilloma is very likely to recur and is very difficult to eradicate.

Permewan (2, Aug.) showed before the London Laryng. Soc. a larynx from a boy of eleven, in whom death had occurred from asphyxia, due to a large papilloina. In this case removal by the endolaryngeal method was first done, then thyrotomy, and three years later thyrotomy again with relief each time.

F. J. Quinlan (1, May) reports a case in a woman of twen-

ty-three, in which he removed ninety-three separate papillomata from the larynx. Aphonia had existed for eighteen months. After nipping off the growths he rubbed into the denuded surface a 10 per cent solution of salicylic acid in absolute alcohol. As a result of the treatment the voice was completely regained.

T. M. Hardie (6, Jan. 7) gives the history of two cases in adults in which thyrotomy was done for the removal of the growths. In one case he operated with scissors and cauterized the point of attachment. In the other, removal was with the snare, and the base was cauterized with chromic acid. No recurrence in either case. Bond (2) reports a case of papillomata in a girl who had been dumb by reason of them. At ten years of age she came under B.'s care and he began clearing out the larynx and repeated the operation every few months for eight years with final success in eradicating the growths and developing the voice.

Scanes Spicer (2, May) exhibited before the London Laryng. Soc. a boy three and a half years old, whose voice had been gone since seven months of age. There were a very large number of papillomata present, which he removed in three sittings, endolaryngeally, under general anesthesia and cocaine. The larynx was completely cleared, but the voice was not recovered until sometime afterward.

E. Baumgarten (5, B. 8, H. 1) does not find adenoids (see L. Browne, note page 52) frequent in cases of papilloma of larynx in children, and suggests possible infection at birth as a cause in some cases. He does not find the endolaryngeal method of removal satisfactory till after tracheotomy.

Treatment.—Rosenberg (5, B. V.) gives an extensive resume of the literature on the subject of treatment of laryngeal papillomata in children, adding nineteen cases of his own. His statistics bear out his conclusion that of the three modes of treatment—thyrotomy, tracheotomy and endolaryngeal means, the latter is much the better, deaths

being fewer and results just as good or better than in the other methods. He therefore advises: First, try endolaryngeal means patiently so long as marked dyspnea is absent; failing this, perform tracheotomy and then employ endolaryngeal treatment, and only in urgent and very severe cases to have recourse to thyrotomy.

G. H. McKenzie (9, May 20) treats laryngeal growths in young children by tracheotomy. He leaves the tube in position for six to twelve months, or until the growth seems to have entirely disappeared. This operation relieves the growth from the irritation of breathing, talking, coughing, etc., and as a consequence it loses vitality and disappears.

Epithelioma.—L. Browne (2, Apr.) exhibited before the Brit. Laryng., Rhin. and Ot. Asso. a case of epithelioma of the larynx, which had lasted two and a half to five years, in a patient sixty-nine years old, in which no operation was done. His treatment is eminently conservative, his experience influencing him to avoid attempts at radical removal in patients of advanced years, where respiration is not embarrassed. The only treatment was iron and arsenic internally. No fragment was removed to confirm the diagnosis on account of the certainty of such action arousing activity in the growth. Vinrace, in the discussion, reported a case of his own, which lasted seven or eight years. These cases were intrinsic and consequently the infection was much less than in cases in which the external parts of the larynx are involved.

H. Tilley reports (9, Oct. 22, '98) two such cases in which removal of the cord and soft parts and the arytenoid cartilage resulted in apparent cure. The patients were men aged sixty-nine and forty-nine years, respectively. L. Browne and others (2, Jan., '98) advocate laryngo-fissure and removal of the soft parts only in the early stages of epithelioma. Collier and others advocated hemi-laryngectomy in all such cases. Semon (2, Mar.) records two cases of epithelioma and

one of sarcoma (unilateral) in which removal of the soft parts resulted in cure for periods of two and a half, one and a half and one-half years, respectively. Woods (2, Apr.) reports a successful case of hemi-laryngectomy for epithelioma in a man of seventy-four. In a discussion in the Netherlands Lar., Rhin. and Ot. Soc. (2, Mar.) several members reported cases of mistaken diagnosis in laryngeal tumors from microscopic examination. J. Frank (137, Dec.) reports a case of carcinoma of larynx in which such a mistake was apparently made, a diagnosis of tuberculosis being made under the microscope, when a second examination three months later showed typical carcinoma.

Hyaline Myxoma. — Gaudier (126, April, '98) records a typical case of this tumor in a man of thirty-four. The symptoms were of three years' duration, and the growth was attached to the anterior commissure. It had attained the size of an almond.

Polypi. — Brindel (11, Nov. 12 and 19, '98), in a study of thirty-three cases of laryngeal polypi, occurring in his own practice, classifies them as follows: Myxoma eleven, papilloma nine, fibro-myxoma two, angio-myxoma five, angio-fibro-myxoma two, fibroma two, adenoma one, chondro-fibroma one.

Rheumatism.—Uchermann (129, No. 39, '98), in an article on laryngeal rheumatism, reports four cases and answers the criticisms of various writers on the subject. He finds it very difficult to distinguish from syphilis in some cases, requiring treatment to differentiate. Several cases of ankylosis of the crico-arytenoid joint probably due to rheumatism have been reported during the year.

Treatment.—H. Moulton (88, Feb.) recommends a 2 to 4 per cent spray of menthol in oil for acute laryngitis. He also recommends a 2 per cent solution of ichthyol sprayed cold into the larynx.

D. Grant (2, Oct.) reports very satisfactory results from the use of salicylic acid five to twenty-five grains, rectified spirits five drams, glycerine three drams, in certain cases of laryngitis, secondary to nasal disease. When there is a whitening and apparent proliferation of the epithelium he uses this application on a cotton carrier, preceded by a cocaine solution, as the salicylic acid mixture is very painful.

Cahn (18, May 11) holds that in chronic cases of laryngeal stenosis, such as paralysis, tumors and tuberculous processes, tracheotomy is preferable to intubation, while in syphilitic obstruction intubation is better.

Mangoldt (55, B. 59, H. 4) details an operation for the relief of stenosis or defects of the larynx. He removes a thin slice from the eighth costal cartilage and imbeds it under the chin between the skin and areolar tissue. After several weeks laryngo-fissure is performed and a flap containing the transplanted cartilage is placed between the separated thyroid plates and fixed with sutures. His results have been good, although treatment by dilatation is necessary afterward, but the tissues stretch readily and the natural lumen of the larynx was soon restored.

Miscellaneous.—H. Schroetter (19, Oct., '98) describes a case of scleroma in a woman of twenty-nine. It first appeared as a tracheal swelling at the level of the fifth ring. This was removed and the trachea dilated. After a few months the larynx became infiltrated and motion of the cords was interfered with. In the same place S. also reports a case of possible Foot and Mouth disease in a butcher. Fever, albuminuria and gangrenous stomatitis were quickly followed by gangrene of one of the vocal cords, and perichondritis necessitating tracheotomy. The patient finally recovered with chronic stenosis of the larynx. Bacteriologic examination proved negative.

T. Hubbard (7, Nov. 25) reports a case of multiple laryngo-tracheal stenosis in a girl of eighteen, which he does

not believe to have been of syphilitic origin, but thinks was the result of some intense inflammatory condition. Thyrotomy was done and by a simple incision of the stricture just below the glottis the symptoms were in large measure relieved. The relief had continued for two years.

Touche (82, Aug. 30), in an examination of forty tabetic patients found laryngeal crises in more than one-fourth. They were generally associated with visceral crises and of intensity varying from fatal asphyxia to a few spasmodic coughs.

- A. C. Howe (6, Oct. 28) records a case of abscess of the anterior surface of the epiglottis in a man of twenty-four.
- S. Oppenheim (2, May), in an extended article, gives a number of cases illustrative of the connection between the larynx and the generative organs in the female. He takes up the several periods of life, puberty, adult life, menopause, pregnancy and menstruation, and gives literature and cases bearing on the relation of the pelvic organs to disease of the larynx at these different periods. Such articles serve to bring afresh to the specialist's mind the fact that he must never forget—the influence which disease of other organs of the body exercises on the organs to which he devotes himself. (See cases reported by Robinson, page 15.)
- Singer's Laryngitis.—H. H. Curtis (9, Oct. 22, '98), in an article on this subject, presents with much effectiveness the *treatment* by means of *vocal exercises*. He believes that seven cases out of ten, which are not due to cold, are due to faulty tone production. He presents a method of vocal exercises which he thinks produces the same effect on the cords that massage does on other parts of the body. He employs no strong astringents in his treatment of the cords of vocalists, but in painful laryngitis, and in mild attacks, he uses suprarenal extract with decided benefit.
 - R. McKinney (30, Aug.) thinks these singer's nodules

are the cause and not the effect of laryngitis. He indorses Curtis' treatment, but also recommends astringents and, if necessary, curette, cautery or caustic for destruction of the nodules.

Pachydermia Laryngis.—While this disease and Singer's Laryngitis are usually classed as one disease, there seems to be at present a strong tendency to differentiate them (2, May, p. 257).

D. Grant (2, Sept.) exhibited a case in a man of fifty-six, in which good results had been obtained by the use of salicylic acid in alcohol twice weekly.

Edema of Glottis.—C. C. Rice (6, Dec. 3, '98) discusses the question of acute primary edema of the glottis and believes such a disease to be extremely rare; nearly every case, when sufficiently investigated, he believes will be found to be due to either some pre-existing local affection in the pharynx or larynx or to some constitutional disease or external irritation. Clark (1, Feb.) reports a case of edema, accompanying a general inflammation of the fauces, tonsils and uvula, resulting from an acute cold. Favorable results were obtained from scarification, cleansing and astringent sprays.

Laryngectomy.—A good article on the technic of this operation by W. W. Keen may be found in the Annals of Otology, Rhinology and Laryngology for August. Moure (11, Oct. 22, '98) does not find much encouragement in operative interference in cancer of the larynx. He considers that laryngectomy, especially, offers little. He would replace that operation by tracheo-thyrotomy.

Rutsch (124, Feb.) reports twelve cases of radical operation for carcinoma of the larynx done in Kocher's clinic since 1890. One was total extirpation, six removal of one-half, three small partial excisions, one thyrotomy, with removal of soft parts, one pharyngotomy with removal of epiglottis. Results: Two died within fourteen days of pneumonia, six

are free from recurrence after four and a half and two and a half years, and ten, seven, six and five months, respectively. Kocher's experience seems to favor the conservative operations, removal of diseased tissues only, but thorough removal.

Ard (1, May) reports a case of successful extirpation of the larynx for epithelioma in a colored woman, forty-one years old.

Bell (58, Vol. xxvij, No. 5), a case of epithelioma in a patient, aged sixty-five, in which the *entire larynx* was removed and the stump of the trachea sutured to the skin of the neck. A good recovery was made.

Garré (13, May 3, '98) performed the operation of total laryngectomy in a man forty-three years old, with no recurrence two years afterward. He also reports two cases of removal of the larynx and part of the esophagus. The operation was successful in both cases, but there was early recurrence in the worst case.

Wallace (9, Nov. 26, '98) reports a case of excision of the *larynx* and *upper esophagus* for malignant disease in a woman. Death occurred after five months. Leech (8, Feb. 18) records a case of total laryngectomy for intrinsic cancer of larynx, with recovery.

Föderl (55, B. 58, H. 4) gives the details of an operation for laryngectomy, in which the end of the trachea, after resection, is *attached* to the *structures above*, using the hyoid bone as an anchorage. This leaves the structures in a more normal condition and the patient is correspondingly more comfortable.

Gluck (80, Mar. 6) describes a very ingenious phonating apparatus in which the current of air is passed from the trachea, which opens externally in the neck, directly to the nose, here passing through an olive containing a reed, thence through a rubber tube to the lower end of the uvula. A good

voice was obtained. G. also reports that in his last twentysix operations for carcinoma of the larynx, he has had twentythree cures.

J. Frank (137, Dec.) records a case of laryngectomy for carcinoma in a man thirty-nine years old, in which it would appear that the disease had existed for nine years. The patient made a good recovery.

Leech (8, Feb. 18) reports a case of intrinsic cancer of the larynx in a man of fifty-seven, in which a total laryngectomy was successfully performed. There had been dyspnea and dysphagia for five months. The glands were not involved. An operation was first commenced with the intention of removing the diseased cords and soft tissues, but the disease was found to be too extensive for anything but complete extirpation. The patient was allowed eleven days after the tracheotomy to gain strength, after which the larynx, including the cricoid and three rings of the trachea, was removed. After a full description of the operation, Leech summarizes his conclusions as follows:

"If I may be pardoned for presuming to offer suggestions, founded on the experience of one case only, I would like to make the following observations: I. The advantage of an interval of time between the tracheotomy and the more serious operation, which, in this case, at least, was most marked, cannot be overestimated. Not only by affording almost complete relief to the dyspnea, and in a less degree to the cough, did it effect a profound improvement in the patient's general condition, but also by dividing the shock, as it were, it gave the patient time to rally under immensely improved conditions. The breathing, too, under the anesthetic on the second occasion, when tolerance to the tube had been established, was much more satisfactory. 2. Seeing that this is an operation par excellence, where time is of the utmost importance, it is difficult to understand why in most recorded cases the operator has usually selected a Hahn's sponge tam-

pon, which necessitates a delay of fifteen minutes for its dilata-On this account, and because Trendelenburg's tube, which can be immediately dilated, lends itself far more readily to asepsis than does Hahn's, I very much prefer the dilating tampon tube. 3. The extensive nature of the growth in this case, with the entire absence of glandular involvement, would seem to support Semon's view of the isolation of the laryngeal lymphatics; but, unfortunately, Sappey's anatomical investigations, which have entirely disproved that eminent laryngoscopist's contention, compel one to admit that the question yet awaits a satisfactory solution. 4. The ease with which deglutition was performed almost immediately after consciousness had been regained, the non-necessity for Symond's tubes, and the entire absence of anything like the alarming hemorrhage which is often encountered in these cases, and which, in this case, might have been excessive, as the patient had a short, stout, muscular neck, I attribute entirely to the adoption of the method suggested by Mr. Henry Morris of freeing the perichondrium and its attachments with a raspatory, and avoiding the severance of any muscular structure, other than the platysma. 5. The very low tracheotomy which was done in spite of Guessenbauer's contention to the contrary, with a view to secure more ample working space, was afterward justified by the extensive nature of the growth. 6. Seeing that in cases of malignant disease of the larvnx attempts at sampling the growth by intralaryngeal snaring frequently prove abortive, and, moreover, often stimulate growth, I consider thyrotomy to be infinitely preferable, and that it ought to be performed in doubtful cases, as by this means the extent and nature of the disease are accurately determined, and treatment can, if consent be previously obtained, be carried into effect immediately."

VOICE.

Onodi (11, Aug. 12) concludes after an examination of a number of monsters and of fetuses, whose skulls had been perforated, but who had used the voice, that he is able to confirm the existence in man of an infracerebral *phonation* center in the region between the posterior quadrigeminal tubercles and the origin of the vagus. He had already established the same location in dogs by experiments.

American Voice.—J. W. Farlow (1, July), in a paper before the Am. Laryngol. Asso., reaches the conclusion that the so-called *American voice*—the high-pitched nasal—is largely due to habit, with perhaps, in many cases, a slightly paretic palate playing a secondary part. Proper voice training speedily remedies this tone.

Falsetto Voice in Males.—D. B. Kyle (136, '98) describes two cases in which there seemed to be *ankylosis* of the left crico-thyroid and crico-arytenoid joints. He attributes the condition to attacks of rheumatism in childhood. The treatment employed consisted in pressure on the crico-thyroid membrane and voice exercises, which brought prompt cure.

G. H. Makuen (7, Mar. 4) gives notes of five cases in four of which normal voice was easily acquired under proper training, while the fifth case, a clergyman, thought his voice better for his business than the normal voice, and refused treatment. The direct cause of difficulty in all of his cases was found to be faulty co-ordination of certain laryngeal muscles, mainly extrinsic. "The levator laryngei were overdeveloped, while the depressors were underdeveloped, and there was lack of proper laryngeal balance." The weak muscle was singled out and trained into right action. The best way to do this is to teach the voluntary control of this muscle, and then by repeated contractions and relaxations the patient may strengthen it to do its normal work. Massage of

the larynx was also useful. Nerve tonics were generally indicated. In one case pressure at the root of the tongue to hold down the larynx (by patient's finger), and also pressure in the groove on the upper border of the thyroid external to the larynx, held the larynx in a fixed position so that the patient was able to say "Ah" in the normal manner.

In another article on the same subject (7, Oct. 7) Makuen points out the fact that while the intrinsic muscles of the larynx are involuntary, the extrinsic muscles which aid greatly in normal voice production are to a large extent under the control of the will. Hence, since many voice defects are due to improper action of the extrinsic muscles, the scientific method of treatment is to bring these muscles into proper use by will-power, after accomplishing which the proper action will quickly become automatic. The falsetto voice is wholly due to displacement of the larynx upward, and is remediable by proper training of the extrinsic muscles.

Aphonia.— F. Woodbury (27, Sept. 10, '98) reports a case of laryngeal hoarseness following removal of papilloma. Examination showed a slight recurrence. The administration of ten grains of sulphate of magnesia three times daily resulted in cure. A. Abrams (16, Nov., '98) uses a spray of methyl chloride or rhigolene over the points on each side of the neck in the thyro-hyoid membrane, where the internal larvngeal branch of the superior laryngeal, the nerve of sensation to the larvnx, passes into that organ. The freezing should be thorough. Relief is prompt and phonation is free. relief may be of short duration in some cases and may have to be repeated. A.'s theory is that the shock inhibits the nerve function for a time, thus giving it rest. Finlay (9, Feb. 25) recommends exercise against resistance in cases of func-The noncutting larvngeal forceps are intional aphonia. troduced between the cords during deep inspiration, then, while the patient attempts phonation, the blades are separated, thus exercising the adductors.

Middlemass Hunt (2, July) reports a case of hysterical aphonia of eleven years' standing, which came on after severe mental shock. The patient was aphonic three or four years, then developed a hoarse voice, which proved to be the result of the use of the vocal bands. Finally, after another shock, the voice returned. The method of cure advised in these cases of "vocal band speech," although it failed in this case, is to teach the patient to phonate with the inspiratory blast, which will bring the vocal cords into use again. Grant and Wingrave, in discussing the paper, confirmed the value of the method described.

Hysterical Larynx.—F. E. Hopkins (6, Dec. 2) presents the history of a case of this disease occurring in an ambitious girl of fifteen, in whom the stigmata of hysteria were absent. The condition developed after an attack of purtussis. A spasmodic condition of the larynx caused a high-pitched sound on inspiration, very much like the squeal of a pig. There were many attacks during the day, but rarely any at night. Treatment by suggestion, by cauterization of the lingual tonsil, and various other measures, including several weeks in a hospital, under the care of a neurologist, failed to give more than temporary relief. Cure was finally accomplished by intubation, the tube remaining in the larynx less than an hour.

Christy (136, 1898), in a paper on the subject of dysphonia, claims good results from the use of the constant current for hoarseness resulting from catarrhal laryngitis, chronic or subacute. The strength of current used is not stated. One pole is placed over the episternal notch, the other at the back of the neck.

TRACHEA.

S. E. Allen (1, Oct.) gives a very unique fatal case of tuberculosis in a healthy-looking country boy, four years A week or two after taking cold, a dyspneic condition developed, which seemed to threaten asphyxiation. saw the case one month after its origin, and found marked dyspnea and noisy breathing. The only symptoms were croupy attacks, coughing and difficult breathing in an otherwise healthy-looking child. The laryngeal examination was negative. Examination of the lungs not satisfactory, by reason of the noisy breathing. Tracheotomy and wearing a tube did not relieve. Three months from the beginning of symptoms the patient died suddenly from an attack of dysp-Post-mortem revealed a large mass of cheesy matter in the trachea, sufficient to account for asphyxiation. the bifurcation were found an ulceration one cm. in size, and several smaller ones. Encircling the trachea at this point was a mass of enlarged glands, and included in the mass was some consolidated lung tissue from the apices. When pressure was applied to the dorsal side of the mass, large quantities of cheesy matter welled up into the trachea. microscope revealed typical tubercles in the firmer masses.

W. B. Johnson (I, July) reports an interesting case of dyspnea accompanying an atypical case of pneumonia in a woman of twenty-six, six months pregnant. The pneumonia had been preceded eight days by the grip. The dyspnea was due to accumulation of dry blood and mucus in the trachea and larynx, forming scales or layers of such thickness as to require intubation at one time by reason of threatened asphyxia. Lime water, used in a steam atomizer, gave most relief. The intubation on the fourth day of the disease was followed by the immediate expulsion of the tube and the obstructing deposit, and gradual recovery ensued.

Massei (63, No. 4, '98) describes a disease which he calls chronic hemorrhagic tracheal catarrh. The patients appeared

weak and frightened by reason of blood which they had been spitting. Examination of chest and larynx proved negative. The trachea, however, showed recent hemorrhage and an area in which there was a perfect network of veins, the varices in each case touching the inferior surface of the vocal cords. The prognosis is favorable when the health is good.

Downie (9, Oct. 14) describes three cases of *syphilitic* ulceration of the trachea, calling attention to the very various symptoms present in such conditions. It is a common mistake to diagnose such a case as tuberculosis, aortic aneurysm or mediastinal tumor. The most common symptoms are frequent and irritating cough, with dyspnea and expectoration of small clots of blood.

Sabrazes and Cabannes (11, Nov. '98) record a case of tracheocele, appearing during the twentieth suspension for tabes in a patient sixty-five years old. The patient was found to be tuberculous. The tumor was punctured and found to contain air only; it was then packed with gauze.

A case of complete rupture of the trachea in a man of fifty-three was reported (6, Oct. 22, '98). The man was struck on the back of the head by an elevator and the sternum broken. Death occurred after fourteen days. Rupture of the trachea was found at the autopsy.

Schutz (80, July 17) reports a case of stenosis of the trachea, resulting from a tracheotomy done eleven years previously. He first used a catheter for relief of the symptoms and accomplished sufficient dilatation for relief by this means and the use of a special catheter made of spiral wire.

Brauer (13, No. 6) reports the case of a woman of forty-eight with a tumor in the trachea of three years' growth. Laryngeal examination showed a pedunculated tumor attached to the first tracheal ring. Removal was done by tracheotomy and the growth proved to be *angio-sarcoma*.

Vaughan (9, Jan. 21) records four cases, all females, of persistence of branchial clefts in three generations of one

family, grandmother, two granddaughters and one great-granddaughter.

Tracheotomy.— T. H. Manley (4. Oct., '98) advocates tracheotomy in adults under cocaine anesthesia as being much safer and simpler than the operation under general anesthesia.

Fraenkel (18, Jan. 5) writes of a case in which tracheotomy had been done for dyspnea. Sixteen weeks after the removal of the tube a fistula still remained and *had become* tuberculous, having become infected by tuberculous sputum.

Keen and Jones (17, June 10) give an account of an interesting operation on two cases of tracheal obstruction. One was a complete diaphragmatic obstruction after cutthroat, the other a case of stricture at the second and third rings, due, apparently, to long-continued catarrhal irritation. Operation was successful in both cases. Reference to the original article is necessary for an understanding of the operations, as the illustrations make them very clear. The uniqueness of both cases rendered specially devised operations necessary.

BRONCHI.

Foreign Body In.—In a discussion before the Chicago Soc. of Internal Med. (7, Aug. 5), the general experience seemed to be that very generally foreign bodies in the bronchi were coughed up sooner or later, and that many times an operation for removal having been done without success, the foreign body would later be coughed up and discharged through the glottis. The conclusion seemed to be, if the patient is comfortable, delay; if the symptoms are serious, operate. In a discussion on the same subject before the Am. Laryngol. Asso. (1, July), Swain, Roe and Woolen took the same ground as above. Roaldes, however, re-

ported eight cases, in seven of which he had successfully removed the body, and it was his opinion that the operation should never be deferred.

E. D. Capps (73, Sept.) calls attention to the utility of the *phonendoscope* in the detection of the location of the foreign body in trachea or bronchi. He used the small rod with the button on. Placing it over the trachea and bronchi at various points, he was able in two cases to exactly locate the body.

A. Coolidge, Jr. (1, July), in a paper on the subject, detailed a case in which he had successfully used a urethroscope in the tracheal opening to locate the foreign body (a piece of a hard rubber tracheotomy tube), after failure with the X-ray.

Warrack (9, Feb. 18) reports the case of a *tooth impacted* in the left bronchus in which death occurred on the tenth day from gangrene of the entire left lung.

Campbell and Smith (57, Jan.) each reports a case of timothy-head in the lungs. In Campbell's case the head remained in for five years, in Smith's case for eight years. In both it was finally coughed up, practically unchanged, and recovery ensued.

MOUTH.

Rose (13, Sept. 5) considers alcohol the best agent for the destruction of the vegetable parasites of the mouth. He quotes Ahlfeldt's conclusions as follows: I. Absolute alcohol possesses no disinfecting power, but its dilutions do. 2. Fifty per cent alcohol possesses the strongest disinfectant action. A higher or lower percentage diminishes the action. 3. Ordinary disinfectants lose their power in a high per cent alcohol. In fifty per cent alcohol, carbolic acid, sublimate, lysol or thymol is more potent than a corresponding watery solution.

Barbier (abst. 2, Apr.) reports a case of tubercular perforation of the soft palate, about one-half inch in diameter. It came on after severe influenza and began as an ulceration of the tonsil and palate. There was no pulmonary disease. Bacteriologic examination showed tubercle bacilli present. Anti-syphilitic treatment proved useless. Lactic acid applied to the ulcerated surface caused improvement.

Fraenkel ($5\frac{1}{2}$, B. 9, H. 3) reports several cases of apparent mouth-breathing, in which the cause was supposed to be adenoids, but which were found to be due to inability to close the lips, on account of the *shortness of the frenulum* Division of the frenulum cured the condition, the nose and pharynx being clear.

Palate.—Rousseau (These de Paris, '98), on the subject of the *innervation of the palate*, describes two cases which he observed clinically, in which it was clearly shown that the nerve supply of the palatal muscles is not from the facial nerve, but from the vago-spinal.

Tilley (2, Aug.) gives an account of four cases in which the same thing was shown clearly.

Ripault (abst. 2, Apr.) records a case of *hemiplegia* of the palate, resulting from the prolonged use of ethyl chloride spray for the extraction of a molar tooth. Cure was obtained after three weeks' electrical treatment.

Bullard (6, Dec. 10, '98) reports a case of adenoma of the palate of two years' growth, in a woman of twenty-three. It had attained the size of a guinea egg. Removal by enucleation with no recurrence.

Maljutin ($5\frac{1}{2}$, B. 9, H. 1), in an investigation of the *influence of the hard palate in vocalization*, found by measurements of plaster casts of mouths of singers and others that in a general way he could state that all those who were able to sing well had a deeply arched palate. The other

measurements might differ, but all possess the high arching dome.

Tuberculous Ulceration of Soft Palate.—E. D. Smith (6, Feb. 11) presents a paper on this subject, with a report of five cases in which the palate and adjoining soft tissues were involved. When seen early the part presents a congested appearance, followed by paleness, which makes it distinct from the adjoining nucous surfaces. Next appear seed-like grayish white nodules, the size of a small pinhead. In a few days these break down and small ulcers appear, which, in bad cases, are very numerous. On the second or third day these coalesce into a grayish-white superficial ulcer. Unless checked, this increases rapidly at the edges and the patient rapidly loses strength and flesh, dying from exhaustion in a short time. Exhaustion is out of all proportion to the extent of the ulcer. Smith has found the most satisfactory local treatment to be the daily application of a mixture of equal parts of lactic acid and glycerine. Under this the ulcers usually heal.

Cleft Palate.—Johann Fein (78, Jan. 26) advances the theory that cleft palate is frequently the result of hypertrophy of the pharyngeal tonsil in early fetal life, the mass preventing union of the two halves of the palate. He points out the fact that in the fetus the various oral structures lie closely packed together and that practically there is no cavity, as is the case after birth. This view is controverted by Tandler (14, Feb. 16), who cites numerous authorities to show that adenoid tissue is first developed at about the fifth fetal month, while union of the two halves of the palate is completed during the third. His own view is that it is the tongue which is interposed and prevents closure of the cleft. He thinks the cleft palate is rather the cause of the adenoids in such a case, than the reverse.

John C. Lester (1, Mar.) describes a successful opera-

tion for cleft palate in an adult on whom two previous operators had failed. The essential points of his operation are the putting in of silver sutures as the first step, then paring the edges in a broad bevel with long curved scissors. He makes an incision on each side of the soft palate to relieve tension and strain of the palate muscles, and allows the sutures to remain in place for two weeks or more.

J. F. McKernon (1, Dec.), in a paper before the Laryng. Sec. of the New York Acad. of Med., describes his method of operating in these cases and gives details of four cases in which both hard and soft palate were cleft, in which the operation was successful. McK. performs a preliminary tracheotomy and uses chloroform through the tube, thus gaining time during the operation and being able to pack gauze into the pharynx so as to prevent blood entering the The tracheotomy tube is left in eight or ten days and feeding is done per rectum. The wound is dressed daily with sterilized gauze. He at first used silk sutures, which were removed on the eighth or tenth day, but in later operations used silver wire and allowed it to remain longer. Much adverse criticism developed in the discussion following, the preliminary tracheotomy being particularly objected to as adding a distinct element of danger to the operation. McKernon thought the dangers of tracheotomy under such circumstances were greatly overestimated and thought the fears were based more on tradition than on present-day occurrences.

Faucial Tonsils.—These organs seem to be growing more and more into disfavor. The literature of the year shows many strong indictments against them. Gerhardt's strong statement that the tonsils are physiological wounds guarded by leucocytes finds willing ears, and as anyone can point to numerous examples of damage for which the tonsils seem to be responsible, while no one is able to

defend them with positive evidence of their value to the system, the war against them will be one of extermination till the real function of the glands is discovered.

- J. H. Coulter read a very valuable paper (7, Sept. 23) before the Sec. of Laryngol. and Otol. of the Am. Med. Asso. in which he gave the results of three hundred tonsillectomies which he had done and the conclusions to which his observation of these results had led him. His operations were all done with the electro-cautery. The entire paper is well worth reading, but only his arguments for tonsillectomy will be inserted here. His statement of the case for the operation is as follows: I. It gives a cosmetically perfect throat. It gives a throat practically precluding the possibility of a return of the tonsillitis. It gives a throat in which there can be no absorption of the toxins or bacilli into the lymph-channels at that point; at the same time it certainly offers to the patient a better chance for recovery, should he subsequently be subject to an attack of any disease affecting the throat, such as the exanthemata, diphtheria or quinsy.
- 2. It liberates and allows a perfect action of the pillars and soft palate, the same result holding whether the pillars were adherent from inflammatory action or bound together by a cicatricial stump, the result of a former tonsillotomy.
- 3. It removes a mechanical obstruction to the sound waves. This, in the case of those professional people who are compelled to use the voice in singing or speaking, is a matter of no little importance.
- 4. The operation, thoroughly and properly done, is more likely to be effectual in relieving a reflex disturbance when such neurosis is due to a pathologic tonsil than is the more simple operation of tonsillotomy.
- 5. If thoroughly and properly done, and the case receives the proper subsequent care and treatment, it will leave a perfectly smooth surface in place of the tonsil, which

result cannot as certainly be attained by a tonsillotomy, and with ignipuncture it is a practical impossibility. With singers this becomes an important matter.

- 6. Pillars, which were for any reason previously hypertrophied, will ordinarily, after this operation, promptly retract to a more normal contour and size.
- 7. It is in some cases a practical operation where another would be almost or quite impossible; for instance, in those tonsils which on the surface are so soft and degenerated that a firm hold on them cannot be obtained by any instrument; to obtain satisfactory results these must be dissected out entirely.

A very general discussion ensued on the relative merits of tonsillotomy and tonsillectomy, in which a majority of the speakers held that in the ordinary case of diseased tonsils, tonsillotomy was quite sufficient, the complete operation being reserved for the very small troublesome tonsils. Some reported that in some cases of tonsillectomy by skilled operators the patients complained of stiffness and soreness afterward and expressed regret that the operation had been done. On the other hand, Coulter claimed as the most convincing proof of the value of the complete operation the unanimous satisfaction which it afforded to his patients.

E. Pynchon (Chic. Med. Recorder, Aug., '98), in a paper with the title "The Submerged Tonsil," considers the dangers and discomfort due to the small tonsil. In many cases a tonsil so small as to be completely hidden by the anterior pillar is producing more symptoms than the large tonsil is capable of doing. P. practices complete ablation in these cases, anesthetizing with a solution of 20 to 33 per cent cocaine and 10 per cent of phenol, locally applied, injecting a small amount if necessary. He then grasps the tonsil with forceps and dissects out with specially bent electrodes with the electro-cautery. He removes in this way one-half a tonsil at a sitting. There is little hemorrhage and

by daily massaging the burned area with equal parts of tinct. fer. chlor. and glycerine, he thinks he gets less contraction of the tissue. The operations are done from ten days to two weeks apart.

R. D. Fry (7, Dec. 16), in a paper before the Cleveland Med. Soc., describes his method of *enucleating* the tonsils under cocain and suprarenal extract. He shells out the tonsils with a blunt hook, without cutting, severing the blood vessels with a snare and applying torsion, thus making the operation bloodless. He had used the method forty times with satisfactory results. From experiments conducted by himself and others he concludes that the tonsils have merely a mucus-secreting function in the lower animals and no function in man.

Recurrence After Excision.—F. E. Hopkins (6, Dec. 2) gives the history of a case of recurrence in his own practice and goes into the literature of the subject very exhaustively. The general opinion thus developed is that a recurrence of simple hypertrophy after thorough excision of the tonsil is very rare indeed. On the contrary, hypertrophy after the ordinary partial amputation is a common occurrence. [The Editor had a case of repeated recurrence in a woman of thirty. The tonsil was small and troublesome, with deep lacunæ, in which the retained products caused soreness and suppuration. The tonsil had been removed by curette and forceps by two other specialists before coming under the writer's care. Thorough destruction by ignipuncture was the method used and finally gave a fair degree of relief. The tonsillar tissue would be destroyed and followed up beneath the pillars till it seemed dangerous to go further. Usually after six to nine months the patient would return with an acute attack of tonsillitis, with typical follicular tissue showing itself. The case was under observation three years and the history of treatment was available for two

years previously. There was no doubt as to the simple nature of the hypertrophy, there being no indication of malignancy.]

Pathology. — Walsham (8, June 18, '98), in thirtyfour consecutive autopsies [presumably on patients dead of tubercular disease] found the tonsils more or less tubercu-Microscopic examination of faucial and lous in twenty. pharyngeal tonsils from living subjects proved entirely negative. Strassman's investigations (J. R. Winslow, 65, Mav 13) have shown that the tubercle bacillus can enter the faucial tonsil without symptoms and infect the cervical lymphatics. Von Schreiber (18, May 25) made microscopic and bacteriologic examinations of a large number of tonsils, with a view to determining the frequency of primary tonsillar tubercu-The tonsils were obtained from young persons free losis. from tubercular disease, from persons dead from violence or diseases other than tuberculosis and in whom autopsy showed freedom from tuberculosis, and from persons affected by tuberculosis. Of the whole number only three were found in which possibly a primary tuberculosis was present and even these were not beyond question. Von Schreiber thinks that the tonsils are not often the point through which the tubercle bacillus enters the system.

Abrahams (9, Feb. 4) gives his conclusions on rheumatic tonsillitis from three years' observation in his own practice. He gives details of a number of cases illustrating (1) the occurrence of endocarditis after non-scarlatinal tonsillitis without joint or choreic accompaniment; (2) tonsillitis immediately followed by a first attack of chorea; (3) repeated attacks of chorea, each preceded by tonsillitis; (4) occurrence of sore throat at various points in the rheumatic series. A. concludes as follows: I. The more common varieties of rheumatic sore throat fall into two main classes, faucial erythema and tonsillitis proper. 2. Faucial erythema is most common

in adults; rheumatic tonsillitis in children. 3. Faucial erythema is an initial manifestation of acute rheumatism; tonsillitis may be the actual primary lesion. 4. Many cases are now definitely on record in which endocarditis has followed a non-scarlatinal tonsillitis, not accompanied by joint pains. In numerous other cases the tonsillitis has immediately preceded an attack of arthritis or chorea. 5. The presence of the same micro-organism in tonsils, joints, blood and urine is evidence in favor of the participation of pyogenic cocci in the etiology of rheumatism.

- F. C. Cobb (119, July 27), from the examination of forty-four cases of peritonsillar abscess, reaches the following conclusions: 1. No causative relation could be proved to exist between rheumatism and quinsy. 2. An acute tonsillitis may sometimes infect the peritonsillar tissue. study of the pharyngo-maxillary space shows (a) that its injection with wax on the cadaver produces an appearance similar to that of peritonsillar abscess; (b) that its distance from the surface of the palate may account for the depth of puncture often needed to obtain pus; (c) that the cross action of the muscles covering the space is sufficient reason for the closure of punctures made into it; (d) that the supra-tonsillar fossa and the infra-tonsillar space is the part of the surface most free from anatomical obstruction; (e) that puncture anterior to a plane passing through the posterior pillars cannot injure the great vessels if the knife be kept at all times anterior to such plane; (f) that the space is divided into two cavities by a septum formed by the stylo-glossus and stylopharvngeus muscles, which in most cases protect the great vessels from purulent infection.
- P. Hilbert (abst. 7, Nov. 25) reports finding strepto-cocci, often virulent, constantly present on the healthy tonsils of fifty school children and fifty patients at his clinic. The streptococci found on the tonsils of ten healthy persons and ten with tonsillitis failed to show any difference in cultures

or in their virulence. H. concludes that the streptococcus probably has no etiologic significance in respect to infectious diseases of the tonsils. [To the Editor a wholly unwarranted conclusion from the findings.]

Rochmont (13, Mar. 7) gives an account of an *epidemic* of tonsillitis in Altona hospital. A woman suffering from an acute articular rheumatism developed a sore throat; seventeen other patients and a nurse had sore throat following. No diphtheria bacilli were found, but among the cases there occurred articular rheumatism three times, and one case each of nephritis, pericarditis, endocarditis and threatened heart failure.

E. Mayer (7, Dec. 2), in an article on "The Tonsils as Portals of Infection," gives an excellent resume of the sub-He quotes F. A. Packard's report (6, June 24) of five cases of endocarditis, in all of which an attack of tonsillitis had preceded the heart affection, in two of which it was certain that prior to the attack of tonsillitis the heart had been sound, and the same was supposed to be the case in the To these Mayer adds one case of his own in other three. which the etiologic significance of the tonsillitis seemed es-His conclusions are: I. Infection arises in tablished. 2. Tonsillar affections are frequently serious in the tonsil. their sequelæ and every step to prevent recurrent attacks should be taken. 3. The existing tonsillar disease should be energetically treated. 4. Careful examinations and treatment are absolutely essential in the interim. 5. Following anginas, the heart and other organs should be examined from time to time.

Treitel (18, No. 48, '98) reports three cases of chronic tonsillar abscess, followed by septic infection and death. The abscesses were small, with no enlargement of the tonsils, making the diagnosis very difficult. M. R. Ward (1, July) gives the history of two fatal cases of septic phlebitis, with thrombus, complicating acute peritonsillar abscess.

Keiper (1, Nov., '98) reports a case of albuminuric tonsillitis in a patient with grave kidney disease. A diphtheroid membrane formed, which, when removed, left a scooped-out ulcer about 1 cm. in diameter. Severe hemorrhage occurred a few days later.

Calculus.—Robertson (9, Jan. 7) gives an account of a case in a man of fifty, who had had repeated attacks of tonsillitis till three years previously, when a glandular abscess, which formed on the right side, was opened and drained, after which there was no more tonsillitis. Six months before this report the patient felt a fullness on the right side of the throat. He awoke one night choking and coughed up a stone one and three-fourths inches long by one and a half broad.

Walsham (8, Apr. 29), in an article on the occurrence of epithelial pearls in the tonsil, alludes to the statement of Kanthack that these pearls, as they occur in fetuses and newborn infants, are retention products and not embryonic in-W. states that the occurrence of these epithelial pearls in the tonsils of adults is not exceedingly rare, as he found three good specimens in 150 post-mortems in which he was investigating the tonsils with reference to tubercles. He considers that there can be no doubt but that these pearls are the origin of some of the so-called tonsillar calculi. In addition to these retention pearls W. describes epithelial accumulations in the lymphatic follicles which he thinks have not been hitherto described. This variety is only found in young persons, disappearing as life advances. W. thinks that these epithelial accumulations in the center of the follicles cannot be regarded as either retention or inclusion products, but are produced by the normal evolution of the tonsil.

Bosquier (abst. 2, Dec.) publishes a case of ulcero-membranous angina, with fusiform bacilli on a tonsil affected with chronic hypertrophy in a boy fourteen years old. The exu-

dation was of considerable thickness and covered a sinuous ulcer. In addition to the fusiform bacillus of Vincent, streptococci, spirillæ and the micrococcus tetragonus were present. Schneider (ibid.) reports a similar case, which presented the appearance of syphilitic ulceration, but rapidly disappeared under local treatment.

Therapy.—E. Mayer (7, Dec. 2) uses the following prescription with great success in *aborting peritonsillitis* when seen early:

R	Morph. Sulpho.o6	$(gr. \frac{9}{10})$
	Tinct. verat. virid4.	
	Aquae126.	(g.s. 34)

M. S. Teaspoonful every hour for three hours, then once in three hours. This is to be stopped after twenty-four hours, unless relief ensues, and soothing applications, rest and salicylates used.

Aulde (37, Nov., '98) considers *nuclein* derived from the thyroid and thymus glands a specific in the arrest and control of acute tonsillitis and infectious diseases generally.

L. Browne (Throat and Nose, pp. 344, 345), in the treatment of acute tonsillitis, clears the alimentary canal and administers the salicylates internally. For local treatment he has abandoned the gargle and has the patient use an irrigating syringe or spray and soothing lozenges. As to guaiacol, he says: "Recently I have largely, indeed, almost exclusively, employed guaiacol. Guaiacol may be described as a purified creosote, and is applied in a solution, made of equal parts of the drug and almond oil [some use the guaiacol pure] on a cotton-wool brush, to the inflamed tonsils. A sharply smarting pain is the first effect of the application. This lasts for but a few seconds, and is followed by a distinct anesthesia of the parts touched by the solution; after a few applications any exudation present rapidly disappears and the inflammation soon subsides. Indeed, I have seen many

cases of tonsillitis, presenting every symptom of termination by suppuration, veritably aborted by a few applications of this remedy." [The Editor finds the thorough application of a 12 to 20 per cent solution of nitrate of silver to the tonsils in the early stage of tonsillitis to act even better than the guaiacol]. As a routine treatment in every case of tonsillitis, "without reference to its variety or causation," Browne also uses the Leiter coil, which he finds greatly relieves the symptoms and considerably influences the duration of the attack, even seeming to abort in some cases.

G. L. Richards (46, Oct., '98) advises hot water and ice as hemostatics in hemorrhage after tonsillotomy. For oozing he uses a gargle of 25 per cent hydrogen peroxide in hot water and if that does not check he applies a pledget of cotton soaked in full strength solution of the hydrogen peroxide.

Heymann (13, Aug. 22, abst. 17) was successful in arresting hemorrhage after tonsillotomy in a hemophiliac by injecting subcutaneously a $2\frac{1}{2}$ per cent neutral sterile solution of gelatin in physiologic salt solution. He at first injected 140 cc. of the solution, but bleeding beginning again on removal of the tampons several days later, 240 cc. more was injected and a day later another 160 cc. As many other remedies had been tried and showed no influence on the bleeding, it seemed fair to attribute the good result to the gelatin injection.

Tumors.—De Santi reports (2, June) a case of *primary* epithelioma of the tonsil in a man of thirty-seven. Inoperable when seen.

Connal (9, Mar. 25) case of primary carcinoma of the tonsil.

A. Onodi (5, B. 9, H. 2) case of *lipomatous fibroma* of the tonsil, making the second case reported by him. Both cases were in children.

Lack (2, June) case of *lympho-sarcoma* in a man of forty-six. Inoperable.

Hopkins (1, Feb.) reports a lympho-sarcoma in a boy of thirteen in whom removal was followed by recurrence. For the recurrence the toxins of erysipelas and the bacillus prodigiosus were injected, with successful result. Mamlock $(5\frac{1}{2}, B. 9, H. 3)$ records a case of primary malignant lymphoma of the tonsil, a very rare case.

Gaudier (52, Sept. 24, abst. 2) gives an interesting case of sarcoma of the tonsillar fossa, which was at first mistaken for phlegmon of that region. The patient was a male, thirty-five years old. Two exploratory punctures had been made, but no pus found. The condition had existed only eight days when seen by G., yet there was difficulty in swallowing and opening the mouth and turning the head to the affected side, but no pain or tenderness, no enlarged glands in the neck, no fever, good general condition. The tumor, the size of a mandarin orange, was situated between the faucial pillars of the left side and the normal tonsil sat upon the projection like a cap. Fifteen days later the patient was scarcely able to swallow and had difficulty in breathing by both mouth and nose. The tumor had now reached the size of a large orange and was at this time wholly removed. The patient died a little more than a month later of pneumonia. The tumor was a very vascular, small-celled sarcoma, with some myxomatous portions.

Uvula. — Hugel (13, No. 44, '98) cites cases to prove that *laryngismus* and possibly even inspiratory stridor in infants may result from an elongated uvula.

Downie (41, Jan.) reports a case of *primary epithelioma* of the uvula in a man of sixty-five. Seventeen months after removal there had been no recurrence.

Ripault (11, Sept. 3,'98) describes a case of spontaneous hematoma in a patient sixty years old.

Angina Prae-Epiglottica Phlegmonosa.—Lublinski (18, Feb. 23) gives an account of three cases of this rather rare condition, a suppurative inflammation of the fossa glosso-epiglottica. There was no general disturbance at first, but all had some discomfort on swallowing and some dryness of the throat. This was followed by weakness and loss of appetite and some fever. Pain in the throat developed and grew very severe, shooting toward the ear. A marked increase in the saliva, and speech became very thick. A diagnosis of hysteria was made in one case, because of no apparent local signs, but examination with the laryngoscope showed a red-gray swelling. The only treatment is incision.

TONGUE.

Armstrong (58, Dec., '98) records a case of excision of one-half of the tongue for *earcinoma*. The submaxillary gland and the adjacent lymphatics were extirpated. The result was excellent.

Lublinski (18, No. 8) gives an account of three cases of suppurative inflammation of the glosso epiglottic fossa.

Malherbe (abst. 2, Dec.) reports a case of *lingual tuber-culosis* in a sailor thirty-two years old. There was neither syphilis nor excess in tobacco or alcohol. The disease had been present five years in little patches which alternately improved and relapsed. The anterior two-thirds of the tongue were smooth and glossy; the papillæ in this locality seemed to be absent, and a number of red papules with yellow vesicular points were present. The papules were the size of a pea and contained a sero-purulent fluid; they healed after discharging without apparent scarring. The pus did not show the Koch bacillus, but M. believed it to be tuberculous, notwithstanding. There were similar patches and papules on the patient's hands.

LINGUAL TONSIL.

L. Browne (I, Jan.) reviews a number of interesting anatomical points concerning the lingual tonsil. He quotes from some writers to show that the belief has been common that the lingual tonsil, like the rest of Waldeyer's lymphatic ring, is fully developed in childhood with a tendency to the usual tonsillar atrophy after puberty. Browne controverts this teaching, and states that according to his observation hypertrophy of the lingual tonsil is very much more frequent after puberty than before. The same being true with regard to varix of the superficial basal lingual veins. [Clinical observation certainly justifies this statement of Browne, the largest lingual tonsils seen by me having been in persons rather advanced in years.—Ed.]

He states that it is common to find in the pharyngeal tonsil "patches of honey-combed homogeneous colloid-looking substance inclosed in what is apparently the remains of a lymph vessel. This substance is probably fibrinous in origin, the result of thrombotic changes. The reticulum itself also appears to be undergoing a similar degeneration. These conditions may reasonably be interpreted as indicative of a retrograde metamorphosis. They are never seen in the faucial or lingual tonsils." Mucous and albuminous glands are also usually found in the lingual tonsil, while very rare in the palatine and never found in the pharyngeal. He calls attention to the great immunity to disease enjoyed by the lingual, as compared to the faucial tonsils, and thinks the better supply of the glands referred to is probably a part of the cause of this.

ESOPHAGUS.

R. Jones (8, May 6), in the matter of foreign bodies in the pharynx and esophagus, deduces the following rules from his experience:

- 1. Bodies which have remained some time and given rise to symptoms of obstruction, irritation, or dyspnea, should be operated on at once. 2. Forcible attempts at extraction through the mouth are to be condemned. 3. Sharp, irregular impacted bodies especially require esophagotomy. 4. Sometimes gastrotomy and sometimes a combination of gastrotomy and esophagotomy is required. 5. No stitches should be used where the wound in the esophagus is jagged, or its walls inflamed. 6. Otherwise stitch with continuous suture, not piercing the mucous coat. 7. Only when no danger of infection or suppuration exists should the external wound be closed. 8. Liquid food may be given by mouth in twenty-four hours after operation.
- W. J. Mayo (7, July 29) in a general consideration of cicatricial stricture of the esophagus gives full details of six cases treated by himself and arrives at the following conclu-1. Systematic sounding should be commenced in from two to four weeks after the swallowing of a caustic sub-2. Should the traumatism be severe, immediate gastrostomy will lessen infection and hasten cicatrization, sounding being carried on as before. 3. Non-dilatable strictures in the vicinity of the cricoid cartilage should be divided by external esophagotomy. 4. Stricture above the arch of the aorta may be safely cut by a combined internal and external esophagotomy. 5. Dense thoracic strictures are best dilated by Ochsner's method, and, if necessary, divided by Abbe's string saw. 6. Impassable strictures should be treated by retrograde dilatation. 7. A dilated stricture should be occasionally sounded for years, if not for life.

Wishart (35, Oct., '98) reports a case of impaction of a *peachstone* in the esophagus in a woman of seventy-six years. The stone lodged seven inches from the teeth. After one week the external operation was done. The patient died seven days later.

Finlay and Anderson (58, Feb.) report a case of car-

cinoma eight to thirteen inches from the teeth, in which death occurred from rupture of the subclavian artery during a slight coughing fit.

St. Clair Thomson (8, Dec. 3, '98), in writing of functional dysphagia, lays stress on the importance in every case of dysphagia of making a thorough inspection of the upper air passages, and a complete examination of the chest before passing an esophageal bougie. For treatment he recommends the use of the bougie with attention to all the methods of treatment useful in cases of hysteria. He points out that carcinoma is the most common cause of dysphagia, and should always be in mind in such cases.

THYROID.

Baurowicz (5, B. 8, H. 2), in an exhaustive article on the subject of "Thyroid Gland Tumors in the Interior of the Larynx, Trachea and Bronchi," quotes five cases of these tumors from other writers and makes record of a case of his own. These tumors are seated in the lateral and posterior walls in the lower part of the larynx and upper part of the trachea. They occur usually in young persons. B. considers that they grow from without. The prognosis is good, as the growth does not tend to recur after removal.

- P. Meyjes (2, Mar.) reports a case of accessory thyroid at the base of the tongue. A. W. Watson (6, Oct. 21) records two cases of accessory thyroid at the base of the tongue. One case was in a woman of fifty, the other in a girl of sixteen. In both cases symptoms were caused by the enlargement and removal was done by the hot snare.
- J. E. Schadle (7, Aug. 12) gives an account of two cases of accessory thyroid tumors at the base of the tongue; both were in women aged, respectively, twenty-five and twenty-three years. He quotes four other cases from literature, all occurring in females.

Reintjes (2, Mar.) reports a case of thyroid gland at the base of the tongue, in which removal produced some symptoms of myxedema.

Oswald (13, Aug. 15, abst. 17) takes up the questions as to the manner in which the thyroid gland exercises its indispensable function, and as to the nature of that function. He finds that the iodothyrin of Baumann represents the gland qualitatively, but not quantitatively, some of the byproducts being also active. He succeeded in extracting two proteid bodies. One which he calls thyreoglobulin contained 1.6 per cent of iodin; the other contained phosphorus, but no iodin, and is a nucleoproteid. He could get almost 10 per cent of thyreoglobulin from the moist gland. He found that the thyreoglobulin had the same influence on the nitrogen-elimination as the entire gland, while the nucleoproteid had no influence in this regard. He, therefore, concludes that the thyreoglobulin fully represents the specific properties of the thyroid gland as regards metabolism. He found the colloid material of the gland to be a mixture of thyreoglobulin and nucleoproteid. This colloid material being found in the lymphatics on its way to the circulation, he concludes that the influence of the thyroid on the general metabolism is not dependent wholly on processes taking place within the gland itself, but also on its secretion, which enters the blood. Oswald thinks the function of this secretion is to direct the finer phenomena of metabolism. The symptoms which arise when the secretion is absent or deficient he considers are probably due to products of intermediate katabolism, which are not formed at all when the gland is acting.

A. C. Stokes (39, Dec., '98), in a paper on the present state of our knowledge in regard to the active principle of the thyroid gland, concludes that the active principle is iodothyrin, obtained from the colloid discovered by Hutchinson. He finds that the method of extraction is important, glycerine extracts being not so reliable as those made with alcohol,

dilute alkalis, or sodium chloride. The active principle contains a variable per cent of iodin, which is combined with a globulin or albumin.

Goitre.—F. C. Schaefer gives an excellent resume (7, Nov. 25) of the literature on the anatomy of the thyroid gland, with the pathology and treatment of goitre. In the matter of medicinal treatment he considers only that by the product of the thyroid, and pure iodin. For four years he has treated three-fifths of his cases, which he considered suitable for medicinal treatment, with iodin, the other two-fifths with the thyroid preparation. He found that those treated with iodin improved the more rapidly, so that he has latterly abandoned the use of the thyroid. The prescription he uses is the following:

R	Iodini (crystals)	gr.	ij.
	Pot. iodid	ζr.	iv.
	Alcohol		³j.
	Syr. simp		³ j.
	Aquæ		

M. S.—A teaspoonful in a wineglass of water one hour after meals.

As few patients can take iodin for more than a few weeks without showing weakness and other unpleasant symptoms, due to the remedy, he weighs the patients frequently and uses iron, and, if necessary, strychnia and calisaya, even stopping the iodin for a week or so if the symptoms require it. He expects results in three to six months. In those cases which require operation he prefers extirpation or enucleation, depending on local anesthesia when possible.

Gautier (Rev. Med. de la Suisse Romande, Oct. 20, abst. 2) discusses the effects of iodine on goitrous patients in regions of endemic goitre. After full consideration of the subject and the citing of cases to illustrate his contentions, he concludes as follows:

- 1. Patients with latent, as well as those with evident, goitre are liable to thyroidism after small doses of iodine.
- 2. If in an area of endemic goitre a patient grows rapidly thin without any known cause, it is well to find whether he may not have been taking iodine unawares.
- 3. The thyroid cachexia may give rise, in those hereditarily predisposed, to various forms of mental alienation.
- 4. In a goitrous area a doctor has the right to employ iodine and the iodides, but it is his duty to watch the results of their administration very closely, especially when the dose is small, and when the patient is goitrous or is suspected to be so.

Exophthalmic Goitre.—G. R. Murray (9, Mar. 18) concludes that the best medical *treatment* in exophthalmic goitre is inunction of an ointment of red iodide of mercury over the thyroid and the use of belladonna in large doses internally to check hypersecretion. The ideal treatment he considers to be the removal of some part of the gland, but this is not without danger. He calls attention to the special danger from too much handling and squeezing of the gland during operation.

White (9, Apr. 1), from clinical experiments with suprarenal and thymus extracts in Grave's disease, concludes that neither is a perfect antidote to the thyroid secretion. The thymus extract seemed to relieve the nervous symptoms, which was suggestive, as the thymus is most active at the period of life when brain development is most rapid.

Boisvert (140, June 21) reports a severe case of Grave's disease cured by extract of *lamb thymus*. All symptoms disappeared and there remained only a slight swelling of the gland. The daily dose was fifteen to twenty-five grains, with prompt improvement after a few days. The treatment was continued three months.

Kant (75, Dec., '98) recommends the following:

R Sulphate of duboisinegr. 1-120 Waterm. 30

To be taken two or three times daily, at the same time watching out for symptoms of somnolence and inebriety.

S. Solis-Cohen (27, Sept. 17, '98) gives four cases of Grave's disease, in which the use of adrenals seemed to bring curative results. Beginning with five grains daily, the amount was gradually increased to thirty grains, and then decreased to ten grains. Luke and Pollard (2, Oct.) give the history of a case in a woman of thirty-two years, in which removal of the enlarged lobe resulted in cure. Dercum (93, Mar.) has found glycerophosphate of sodium or calcium of great value in the treatment of the disease

General.—P. F. Morf (7, Apr. 29) reports a case of sarcoma of the thyroid in a man forty-seven years old. He enters into consideration of thirty-nine other cases, which he has collected from literature. Removal in his case was followed by good recovery, but recurrence took place four months later at the inner end of the clavicle and death from dyspnea followed quickly.

C. S. Shaw (121, Feb.) gives details of a case of *suppuration* of the thyroid in a boy of twelve. Incision and packing resulted in rapid healing.

A. I. Bouffleur (142, Nov.) in an article on the treatment of goitre arrives at the following conclusions: 1. Successful treatment depends upon accurate and early diagnosis of the nature of the goitre. 2. Struma should be treated by internal use of iodine, or thyroid extract and the intraparenchymatous injection of iodoform or carbolic acid. 3. If these fail, either enucleation or partial thyroidectomy is indicated. 4. Adenoma should be treated by enucleation if the tumor is small, and by partial thyroidectomy if of large size. 5. Cysts should be treated by evacuation and injection of carbolic acid solution or iodoform emulsion. 6. If this fails, they should

be enucleated. 7. Sarcoma and carcinoma should be treated by complete removal of the thyroid gland, with subsequent administration of thyroid extract.

THYMUS.

Avellis (5, B. 8, H. 1) gives an account of a boy four years old, very strong and well nourished, apparently in perfect health, who about three hours after a hearty breakfast began suddenly to breathe in a labored manner and became cyanosed. Death without convulsions took place within two hours of the onset. On autopsy nothing to account for the obstruction was found except an *enlarged and vascular thymus*. The spleen was only rudimentary, the size of a thumb-nail. The other organs were healthy.

Avellis (5, B. 8, H. 2, abst. 2, Jan.), considering the foregoing case in connection with other cases of typical inspiratory stridor of infants, which he had opportunity of observing, concludes that the cause of the disease is enlargement of the thymus. Cases are quoted to prove that this disease has been cured by stitching the thymus to the fascia over the sternum, and by extirpating a portion and drawing the remainder forward. The following facts favor the theory of stenosis of the trachea and bronchi by the thymus: age of the child. 2. Frequent spontaneous cure in the second year after having been present several months. it may be congenital. 4. The manner in which cure takes place. 5. The temporary cessation of stridor on changing the position of the body. 6. Absence of abnormality in the larvnx. 7. The high position of the larvnx. 8. Entry of air more freely into one bronchus than the other. 9. The result of operation. A consideration of these points, together with failure of intubation or tracheotomy to relieve, while introduction of a long cannula gives relief, will suggest

the diagnosis and treatment. The original article or the abstract (in 2, Jan.) is well worth reading.

Purrucker (13, No. 28) relates a case which agrees well with Avellis' views. A child two years and three months old presented all the symptoms of *laryngeal stridor*, which had existed since two weeks after birth. Operation showed an enlarged thymus, lying deeply behind the sternum. Pulling the thymus forward relieved the stridor. The gland was removed with complete relief of all symptoms except hoarseness. Eight months after the child was strong and healthy.

Stamm (13, No. 38) reports a case of congenital laryngeal stridor, in which, while there was marked dullness over the upper third of the sternum, which might be due to enlarged thymus, the absence of other symptoms of such enlargement and a consideration of the various features of the case leads him to attribute the condition to a central functional disturbance. This he thinks to be a congenital arrest of development of certain centers of co-ordination, probably in the region of the calamus scriptorius, which, according to Semon and Horsley, is the center for involuntary laryngeal movements. His treatment consisted of the administration of phosphates with cod-liver oil. Marked improvement was noticeable in two weeks, cure taking place in six weeks.

Louga (33, Oct. 25, '98) tells of the case of a fourteen weeks' baby, which had been apparently healthy, but which was found dead in its bed one morning.

An autopsy showed no other lesion than an *enlarged* thymus, which was compressing the trachea. There had been no symptoms during life.

Bernoud (II, Feb. II), in a paper on the subject of laryngeal spasm, gives details of nine cases and states his belief that the cause of the disease is a peripheral irritation of the superior laryngeal nerve.

HAY FEVER.

McBride (95, July) considers hay fever to depend for its development on a *neurotic basis*, and finds that in a large number of cases the nasal passages are normal, except during the attacks.

C. M. Cobb (120, May) concludes from the rarity of hay fever among ruralists and its prevalence among city residents that the general cause of the disease must be some element of city life, being neither dust nor pollen, but more likely the nervous wear and tear of city life. He found about one-half of his cases to have marked nasal disease, the posterior third of the nose being invariably the location of the point of irritation, when the nasal factor was at all prominent. C. claims 75 per cent of cures. His treatment consists of zinc phosphide, quinia and arsenic internally, exercise and frugal diet, shower baths and friction, with hyosciamus and suprarenal extract for temporary relief. He believes there is too much surgical interference in these cases.

W. Cheatham (44, Oct., '98) treated his cases of hay fever locally, with a 25 per cent solution of chromic acid, applied to the lower half of the middle turbinates, the entire inferior turbinates and the corresponding part of each side of the septum. He used syrup of hypophosphites or a pill of zinc phosphide and nux vomica internally. Scheppegrell in commenting (1, Mar.) well remarks that "such an extensive application of chromic acid should be used with great caution."

Rixa (7, Jan. 21) irrigates the nasal fossæ with a sterilizing solution consisting of one ounce of hydrozone to twelve of water, increasing the hydrozone to two or three ounces in severe cases. This is used as a douche four times daily, beginning two weeks before the expected onset. Between the douches he uses a spray of hydrozone, one-third, with two-thirds water or glycerine.

Solis-Cohen (17, Aug. 13, '98) recommends suprarcnal capsule. In his own case a five-grain tablet of the dried gland, taken from three to five times daily, proved very effective.

B. Douglass (6, Sept. 2) also recommends dried suprarenals as almost a specific, but treats the nasal disease in the usual manner in addition.

WHOOPING COUGH.

H. L. Wagner (6, Oct. 8, '98) claims that an early diagnosis may be made in whooping cough by bacteriologic examination of the nasal secretion. The normal mucous membrane of the nose harbors but few bacteria, while in pertussis a large mass of bacteria, a natural pure culture of pol-bacteria, is found.

Hagedorn (abst. 1, Mar.) gives what he considers a pathognomonic sign of this disease in the early stages. This is a circumscribed area of redness and swelling, occupying the middle of the anterior surface of the posterior laryngeal wall, found oftener below than above the cords and extending down into the trachea.

Treatment.— M. Filho (143, Nov., '98) claims excellent results in whooping cough from swabbing the periglottic region with a 10 per cent solution of *citric acid* in simple syrup. He also claims this treatment to be an effective prophylactic against infection.

H. S. Oliphant (7, Mar. 4) believes formalin to be a specific in this disease. The duration of the severest cases was less than a week. Only weak solutions should be used.

Gilbert (abst. 7, Dec. 16) reports excellent results from antitoxin in whooping cough. Nine severe cases in children

were treated. The number of coughing spells were reduced from twenty to thirty in twenty-four hours to three or four and the specific cough was abolished in ten days.

TUBERCULOSIS.

While the subject of pulmonary tuberculosis does not fall strictly within the range of nose and throat literature, yet it is so largely responsible for conditions which properly come before the specialist in these lines, that a brief resume of the more important papers of the year will not be amiss in these The disease has occupied the usual amount of attention during the year, and while no very new ideas have appeared, yet a very large number of valuable articles have shown the progress of thought in this line. In the matter of prognosis the tone seems to grow more hopeful year by year, and as the conditions conducive to the disease become better understood there appear from time to time hopeful spirits who dare to think of a time when this scourge may be in a very large measure wiped out, believing that as it is a disease of imperfect civilization a more perfect civilization will be able to largely eliminate it. As regards treatment, among medical agents, creosote and its compounds and derivatives continue to hold the front rank as effective agents, simply because nothing better has been discovered, and their effects on the nutrition of the tubercular subject are very marked in many cases. Formaldehyde has been brought forward by a number of observers as having a favorable influence, and Tuberculin, tuberis well worthy of further investigation. culocidin, and various extracts of the tubercle bacillus, still find supporters who report very positive results from their use. Von Ruck continues to report good results from his watery extract of the tubercle bacillus, as do several of his followers. The most attention at present, however, is being

given to the sanatorium treatment, in which fresh air, outdoor exercise and diet are accomplishing what seem to be extraordinary results. Efforts are still being made to convince the general practitioner (who sees practically all of the cases) that he can treat many of these patients successfully at their own homes by following the lines in use at the sanatoria and following them actively and energetically. While a climatic change, plus the other treatment, is better for nearly all early cases, yet in patients unable to leave home results are being attained which compare very favorably with those of the special resorts. More and more attention is being given to early diagnosis, as it is recognized, as some one has well said, that "there is no chronic disease more curable in the early stage and none more hopeless in the late stage." The use of tuberculin is lauded by some (E. O. Otis, 132, July), but rejected by the many as being of uncertain value and not without danger. The X-ray is finding a useful field in this direction, and is becoming recognized as a very important aid to early diagnosis.

Pathology.— Birch-Hirschfeld (Deutsches Arch. f. klin. Med., Vol. 64, abst. 17, Dec. 16), as a result of his clinical researches on the subject of pulmonary tuberculosis, concludes that in the first stage it presents itself as a rule "as tuberculosis of the mucous membrane in the medium-sized apical bronchus." He gives a description of the methods by which he arrived at his results. The statistics of the Leipsic Clinic from which his material was obtained show that in the years 1895-1896-1897, there were 3.067 bodies examined, of which 41.86 per cent had tuberculosis of the lungs. In 23.3 per cent this was the cause of death. In 3.4 per cent, although far advanced, there were other complicating conditions. In 11.97 per cent there were old cicatrized pulmonary lesions, and in 2.8 per cent very early lesions. Altogether, there were 826 cases of sudden death, either as the result of accident or acute

disease, and in thirty-five of these the changes characteristic of latent or commencing focal pulmonary tuberculosis were present. Of these about twenty-five cases were used in the statistics of his paper with seven additional ones from other sources. He considers that these lesions (in the apical bronchus) are ordinarily overlooked in autopsies, but can usually be found if the lung is carefully palpated before any incisions are made in the lung tissue. Twenty-eight of the thirty-two cases showed the primary lesion in the wall of the medium-sized bronchus. In some cases there was only a tuberculous bronchitis. Three cases had a primary interstitial tuberculosis. In one the pleura showed the primary lesion, in another the lymph glands, and in a third the interstitial tissue of the left upper lobe. B. explains these three cases by assuming them as possibly secondary to some other tuberculous lesion in the body. In none of his cases did he find ground for believing that the primary lesion was a tuberculous bronchopneumonia. Many other interesting points are brought out in this paper for which the reader must be referred to the original or to the very full abstract from which these items are quoted. B. thinks that probably the most important element in diagnosis is percussion, but thinks it possible that such lesions may in the future be earliest recognized by means of the Röntgen ravs.

G. F. Still (9, Aug. 19), after studying 269 cases of tuberculosis in children with autopsy in each, reaches the following conclusions: 1. The commonest channel of infection with tuberculosis in childhood is through the lung. 2. Infection through the intestines is less common in infancy than in later childhood. 3. Milk, therefore, is not the usual source of tuberculosis in infancy. 4. Inhalation is much the commonest mode of infection. 5. Prophylaxis must be directed to the prevention of overcrowding, the improvement of ventilation, and the inculcation of the extreme importance of fresh air during early life.

Diagnosis.— S. A. Knopf (7, Dec. 9) opposes the use of tuberculin as a diagnostic agent in the human race, both on account of the danger, which, though slight, is nevertheless real, and also on account of the uncertainty, as many cases of other diseases give the reaction and some cases of tuberculosis do not. Knopf mentions with approval the new sign discovered by Murat, as an aid to the early diagnosis of phthisis. This symptom is the more or less disagreeable sense of vibration in the affected part of the lung, recognized by the patient on loud and vigorous talking. Directions for better eliciting the sign are given. K. considers the X-ray as only able to afford confirmation of disease already discovered to exist by other methods, and not affording any earlier evidence than examination by other methods. His experiments with the new process of agglutination as a means of early diagnosis were also unsatisfactory.

J. Rudis-Jicinsky (6, Feb. 18), in twenty cases of pulmonary tuberculosis, found that the X-ray showed the degree, position and relation of the diseased areas more fully and accurately than the ordinary methods of diagnosis. He considers this method especially useful as a means of making a positive diagnosis of the stage of the disease.

Treatment.—Wm. Murrell (131, May) details experiments on cultures of tubercle bacilli with various essential oils and formaldehyde. The oils by the methods used (passing air saturated with the oily vapor over cultures in flasks) showed practically no inhibiting power on the growth of the bacilli, and clinical experiments led M. to the same conclusion. On the contrary, the formaldehyde gas in very considerable dilution with air exercised marked germicidal powers, completely sterilizing the cultures. Clinical experiments seemed to verify the curative power of formaldehyde and the histories of a number of cases are related in illustration. Murrell's method of use is to have the patient use a 6 per cent

solution in an inhaler, inspiring air forced or drawn through the solution on one or two occasions daily. Another method was to have the patient wear a bib continuously on which a few drops of the full strength solution was sprinkled every two or three hours. For inhalation the strength of the solution must, of course, be varied to suit the susceptibility of the patient.

H. M. Thomas (53, Oct. 13) gives his experience in the treatment of pulmonary tuberculosis with antiseptic nebulæ. He has had his best results with a 1.6 per cent solution of formaldehyde in water, increasing the strength daily till 8 per cent is reached. [A note of warning has been sounded by some writers during the year as to the dangers from the inhalation of strong solutions of this gas, there being danger of gangrene from its destructive action on the tissues with which it comes in contact.]

Maragliano (82, Aug. 6, '98) reaches the conclusion that the employment of *serum* for the tuberculous patient is justified from a scientific point of view; (a) by the action of serum against tuberculous poisons; and, perhaps, by an action yet to be determined upon the bacilli; (b) by the analogy of the therapeutic process of the serum with the defensive process of the organism in spontaneous cure. He finds support for his conclusions from the examination of 1,362 clinical observations.

Playter (6, Sept. 3, '98) recommends hyper-respiration of cool outdoor air in the early stage of tuberculosis, while in the later stages oxygen should be supplied in such form as, for instance, ozonized oxygen, as to relieve the patient from the necessity of very active inspiration.

Elestrom and Grafstrom (6, Aug. 27, '98) make a report on their experiments with the *injection of heated blood* in cases of croupous pneumonia and pulmonary consumption, showing apparent benefit in incipient cases.

W. H. Weaver (7, Jan. 14) gives a table of fifty-two cases

in which he uses a method of forcing air into every part of the lungs. The patient is directed to take as full an inspiration as possible, and then close the glottis and bear down as if straining, so as to increase the tension in the upper chest. To stimulate the interest and active co-operation of the patient the nebulizer is used. Of the fifty-two cases, nincteen first-stage cases cured; of twenty-eight second-stage cases, sixteen were cured, seven improved, three died; of nine third-stage cases, there were no cures, six were improved temporarily.

Bayer (130, Mar. 4) uses intra-tracheal injections of creosote carbonate in chronic bronchial catarrh and pulmonary tuberculosis, with abundant expectoration. The treatment produces no irritation and is easily borne. One-half to 1½ cc. of warmed fluid is injected.

Lenzman (6, Aug. 20, '98) claims better results from the use of *iodoform* in tuberculosis than from the ordinary systematic line of treatment.

J. E. Stubbert (Trans. Am. Climat. Asso., '98) claims excellent results from *sero-therapy* in tuberculosis. He reports on eighty-two cases.

The outline of home treatment as given by Osler (abst. 141, Dec.), gives a good working program to be adapted to the individual case. After stating that in 95 per cent of the cases of consumption seen by physicians, the patients are unable to afford treatment away from their homes, Osler outlines his treatment for these home-staying patients. Arrest or cure of tuberculosis is a question entirely of nutrition, and, of the measures by which the general nutrition of the body may be encouraged, the first and most important is fresh air. The following directions for home treatment are given: The almanac is to be taken and the hours of sunshine counted. In winter two hours are to be cut off in the morning and one hour in the evening, and for the remainder of the day the patient must be out of doors. If there is no possible arrange-

ment for life out of doors, the patient must be put in a room with southern exposure, and the bed moved into the sunshine, with the windows wide open. If there is a balcony or veranda with a good outlook toward the south, it should be arranged for the patient; if not, a shelter in the yard can be put up at a very moderate cost. On a well-padded lounge, covered with a couple of thicknesses of blankets, the patient sits or reclines all day. Only on blustery, stormy or very rainy days is the patient to remain in the house. No degree of cold is a contra-This continuous open-air life at rest is the most powerful influence possessed to-day against the fever of tuberculosis. In any long series of cases the patients who do well are those who take plenty of food. Each case must be dealt with separately, but as large a quantity of food as possible should be given, even, when possible, insisting on overfeeding or stuffing. For some time personal patients have been urged to accustom themselves to take raw eggs, beginning with one three times a day, and increasing until they can take twenty to twenty-four a day. If broken into a cup and sprinkled with a little pepper and salt, the egg can be readily swallowed without breaking volk.

The following abstract from the report of the first year's work of the Massachusetts State Hospital for Consumptives at Rutland is given as a fair sample of the work being accomplished in sanatoria: The hospital was opened in October, 1898, and is the first state institution for the treatment of phthisis. The work of this state hospital is limited to such "as are deemed not too far advanced to admit of reasonable hope of radical improvement." The number of patients admitted was 214; discharged, 126; still under treatment on October 1, 1889, 88. Of the 126 discharged, 11 remained less than two weeks; of the 115 others, 35 were rated as "arrested cases," 37 as "much improved," 17 as "improved," 24 "not improved," one died and one proved to be a simple case of bronchitis. The term "arrested cases" was applied to those

in which all active symptoms—like cough, expectoration, and fever—have disappeared, and where the general symptoms would indicate complete restoration to health. On entrance, 27 of these cases had slight signs in one or both apices, in 8 the signs were somewhat advanced in one or both lungs. Bacilli were found in 20 cases; 2 gave the tuberculin test, 9 without sputa gave undoubted symptoms and physical signs of pulmonary disease, and 2 were very suspicious without definite signs in the chest. The average gain in weight in these cases in an average stay of four and one-half months was fifteen and one-quarter pounds. The percentage of the "arrested cases" out of the whole number of patients was 31 per cent; this percentage is almost exactly the same as that noted in sanatoriums elsewhere. Constant effort is made to induce patients to seek some form of livelihood other than the one in which the trouble arose. At Rutland, constant life in the open-air, whether resting or exercising, is insisted upon. Except at the hours of rising or going to bed, the windows are left open, varying somewhat, according to the outside temperature during the twenty-four hours. Sponge baths and plunge baths, pulmonary gymnastics, three hearty meals a day, with lunches of milk and eggs, or their equivalent, are essential parts of the treatment. Little weight has been given to medicinal treatment, except as an adjunct to the other more important kinds.—V. Y. Bowditch (abst. 141, Dec.).

DIPHTHERIA.

Bacteriology.—Stoos (139, xv., No. 4; abst. 42, June 10) gives the results of his examinations in coryza with reference to the Klebs-Læffler bacillus. He examined a large number of cases and found bacilli resembling short and medium diphtheria bacilli. In forty-five cases he found short, medium and long bacilli; bacilli from two of the cases proving

virulent on inoculation, two weakly virulent and forty-one not at all so. His conclusions are that in catarrhal rhinitis in children two sorts of diphtheria bacilli occur. I. In the great majority of cases a pseudo-diphtheria bacillus very like the K.-L., but not absolutely identical. 2. Short K.-L. bacilli generally of diminished virulence.

- L. D. Davis (70, Apr. 29) reports isolating a bacillus from ten of twelve cases of *searlet fever*, complicated by otitis media, which resembled the diphtheria bacillus in all cultural characteristics, but produced no diphtheria toxin. The bacillus was practically *non-pathogenic* to guinea pigs.
- J. H. Adair (133, Sept. 1), from investigations made in the laboratory of the State Board of Health of Minnesota, concludes that while the Klebs-Læffler bacillus is present in every case of diphtheria, its presence is no guide as to the virulence of the disease. He finds the K.-L. bacillus, or one morphologically identical, in nearly one-third of all children, about as frequently in those who have never had diphtheria as in those who have had acute attacks, but in the former it is more likely to occur as a variant type. He does not believe it possible to permanently dislodge the bacillus from the throat and nose with the means at present available. [Such investigations are very valuable in the additions which they make to our knowledge of the causes and conditions of disease. They, however, only confirm the long-known clinical fact that an individual may be exposed many times to a disease before he finally succumbs. Much is made of the presence of the K.-L. bacillus in healthy throats by the opponents of the germ theory. Our enemy's soldiers, whom we are able to prevent from crossing our border, are no less soldiers and enemies because they are unable to penetrate and make havoc of our country. The germs of disease are undoubtedly always ready to enter our tissues, but as a general rule they perish on the borders by reason of the overpowering resistance with which our cells meet them.

Richmond and Salter (Guy's Hosp. Reports, 1896, abst. 2, May), after analyzing one hundred and fourteen cases of diphtheria of all degrees of severity with reference to the bacillus present, its virulence and toxicity reach the following conclusions: 1. The virulence of a diphtheria bacillus for guinea pigs bears no relation to the severity or malignancy of the disease in the patient from whom derived. 2. No relation exists between the length of the bacillus and the severity of the disease in man. 3. The so-called pseudo-diphtheria bacillus can only be regarded as a mild and attenuated form of the true causal agent of diphtheria. 4. Diphtheria has its immediate cause, the K.-L. bacillus, and its variants include all the so-called non-pathogenic forms. 5. Other factors than the bacillus must be considered in the production of the disease in the individual.

Smith (8, Nov. 19, '98) found plenty of diphtheria bacilli in the urine of guinea pigs infected with diphtheria and suggests the necessity of investigating urine from the human subject in the same disease.

In an abstract, in the Laryngoscope for June, the subject of diphtheria bacilli in the organs is considered. Recent research has caused the ground to be taken that the K.-L. bacillus does not penetrate much beyond its entering point and does not find its way into the blood and organs, except when associated with the staphylococcus or streptococcus, but under these conditions it is found in abundance in the blood and organs. Barbier's theory that the diphtheria bacillus does not find a ready foothold in man, but requires a soil prepared by some other infection, finds confirmation in these researches. When the streptococcus is associated with the diphtheria bacillus the general condition is serious, the patient has diphtheria and septicemia.

H. L. Russell (7, June 24) gives the result of his investigations in three cases of diphtheria, in which frequent examinations were made and virulent bacilli found up to four months after the acute attack had subsided.

Coles (9, May 20, abst. 17, June 10) has used with satisfaction a modification of Neisser's diagnostic stain for the diphtheria bacillus. His method is as follows: 1. The films from a culture or membrane are spread on slides or coverglasses, preferably the former. 2. They are fixed in the ordinary way by heat or by immersion for a few minutes in equal parts of ether and absolute alcohol. 3. Stained in Neisser's methyleneblue for ten to thirty seconds. 4. After washing they are immersed in Gram's iodin solution or Weigert's modification for ten to thirty seconds. 5. Again thoroughly washed in water and stained in the Vesuvin solution for ten to thirty seconds. 6. Dried and mounted in Canada balsam. The time in each of the three solutions seems to make no difference, except in the intensity of color; a half minute to each gives good results. Diphtheria bacilli stained in this manner appear as slender rods of a yellowish-brown color; each containing a granule at both ends, and sometimes one in the center. The granules are always contained in the bacilli and appear a little larger than the bacilli.

Pathology.—Batten (9, Nov., '98) gives a description of work done on the nervous system in cases dead with *diphtherial paralysis*. Marchi's method was used in the investigations. A comparison of his own work with that of others leads B. to the conclusion that the chief lesion in diphtheritic paralysis is a parenchymatous degeneration of the myeline sheath of the nerves and that this degeneration affects both motor and sensory fibers alike.

Mennier and Bertherand (abst. 2, Feb.) report a case of angina having all the local and general symptoms of diphtheria, but in which no K.-L. bacilli could be found, but an abundance of a variety of *leptothrix*. Antitoxin had no effect, but recovery ensued.

Nicolle and Hebert (abst. 2, Feb.) had one case of chronic and one of acute angina with *Friedlander's bacillus*. In the chronic case the membranes were firmly adherent; in

the acute case they were loosely attached. The acute case was very similar in violence of symptoms to diphtheria. Barbier (138, July 23 and 30) had a case of recurring diphtheria with septic conditions, which finally yielded to antitoxin.

Sendziak (5½, B. ix., H. 1) reports a case of pharyngeal diphtheria, followed by *abscesses* of the faucial, pharyngeal and lingual tonsils and faucial peritonsillar connective tissue.

Bruck (80, No. 31) reports a case of *post-diphtheritic ci*catrization involving adhesion of the right posterior pillar and a large part of the soft palate, almost completely obstructing both choanæ.

Todd (8, May 28, 98) describes a vestibular rhinitis not membranous in character, yet associated with the K.-L. bacillus, which bacillus is not present in the fauces in these cases. It is contagious as vestibular rhinitis, but has not been observed to give rise to faucial or laryngeal diphtheria. It is not accompanied by rise of temperature, albuminuria or marked glandular enlargement.

Goodale (I, Jan.) reports a case of diphtheria of the floor of the mouth in a woman thirty-six years old. There was a diffuse, soft, elastic swelling raised in ridges as high as the inferior incisors, covered with a white exudate. The gums were red, spongy and swollen; the glands below the jaw moderately enlarged, but not tender. There were no complications and speedy recovery took place under simple cleansing.

Treatment.—E. Rosenthal (7, Sept. 16) reports several cases of chronic croup treated by antitoxin and antistreptococcic serum. He makes a bacteriologic test, and if streptococci are found with the K.-L. bacillus, both antitoxin and serum are used, while in cases in which the K.-L. bacillus is absent, and the streptococcus present, the serum alone is used. In this way he cleared up the larynx very quickly after antitoxin had failed.

A. Hand (17, Aug. 27, '98) and J. M. Swan (27, Nov. 12, '98) recommend the use of a 12 per cent solution of silver nitrate locally for the destruction of the diphtheria bacillus after the membrane has disappeared. Lederman likes the same solution in all cases of acute inflammation of the pharynx or fauces.

Pauthen (abst. 2, Feb.) recommends aqua chlori (fresh preparation) as an excellent remedy for diphtheria. His method of using is to administer every two hours a teaspoonful of a mixture containing 30 to 75 per cent of chlorine water. He claims a mortality of only 2 per cent. A writer (77, Jan. 18) claims a loss of only three out of one hundred and seventy-seven cases of diphtheria, treated with the following:

Ŗ	Trichloride of iodin5 gm.
	Distilled water500 gm
	Saccharin50 gm.

M. S.—Dilute with ten parts water and gargle ten times daily. After each gargle insufflate into the nose and throat a powder composed of sodium sozoiodolate 5, sulphur 15. Administer fifteen to forty drops of ethereal tincture of chloride of iron four times daily.

ANTITOXIN.

The literature on antitoxin has been fairly abundant during the year. The comments on its use are almost without exception favorable. The only writer of prominence who has not been enthusiastic over its use is Kassowitz (15, No. 38, '98), who thinks the results under the old treatment were about as good. Other articles opposed to antitoxin have been those of Birdsall (38, Dec., '98), J. E. Hermann (6, Mar. 11) and A. Rupp (68, Nov. 5 and Dec. 31, '98; Jan. 28). As the safety of the remedy becomes more and more established, the

tendency is to become bolder in its use, the size of the dose being increased, apparently somewhat under the old idea that if a little is good a great deal more must be better. Reports have been made of the use of as high as 8,000 or more units in a single case.

E. Klebs (7, Dec. 16) sounds a note of warning against the use of too large a quantity at one injection. He considers it a serious error to recklessly inject 5 cc. at once, as he has known of fatal results from such injections in both children and adults. Klebs recommends heating the serum to 60° C. to destroy its globulicidal properties, this operation not interfering with its antitoxic effects.

Bolton (8, Apr. 1), from a study of one hundred cases with *complications* apparently caused by antitoxin, concludes that while the complications of the antitoxin treatment are at times very painful and inconvenient, they are quite harmless. The chief complication is the rash which occurs in about one-fifth of all cases.

There are a good many reports, of which that of Kalb (17, July 8) is a fair sample. His experience with *laryngeal diphtheria* before the antitoxin era comprised twenty-five cases with a mortality of 84 per cent. Since he began the use of antitoxin he has had sixteen cases with a mortality of 12½ per cent.

J. E. Jordan (17, Feb.) has compiled a table of statistics, showing the death rate in diphtheria under the old and the new treatment in the larger cities of Europe and the United States:

CITY.	Average death-rate from diphtheria and croup, per 10,000 population, 1886-1894	Average death-rate from diphtheria and croup, per 10,000 population, 1895-1897		
266 German towns	10.6	4.4		
Berlin	9.3	4.0		
Paris	6. 1	1.5 (2.1)*		
London	6.o	5.8		
New York	15.1	8.0† (7.1)‡ 6.4† (5.2)‡		
Chicago	12.0	6.4† (5.2)‡		

CITY.	Average death-rate from diphtherla and croup, per 10,000 population, 1886-1894	Average death-rate from diphtheria and croup, per 10,000 population, 1895-1897
Brooklyn	14.7	10.1† (8.8)‡
Philadelphia	10.1	11.0† (10.7)‡
St. Louis	11.7	7.5
Boston	11.8	10.9
Baltimore	7.0	6.2
Milwaukee	13.5	7.3

European writers claim that the difference shown in the improvement in Europe and the United States is largely due to the better quality of the serum used in the former.

INTUBATION.

J. Trump (13, Nov. 7) gives a synopsis of the experience of eighty-nine physicians in Europe and America on the subject of intubation. Five thousand four hundred and sixty-eight intubations with serum treatment gave recoveries of 81.98 per cent, while before the use of serum the recoveries were only 36 per cent. Two deaths were reported from obstruction of the tube, ten from coughing up the tube and one from stenosis following removal of the tube.

THERAPEUTICS.

W. F. Waugh (85, Oct.) finds europhen the most satisfactory in all regards of all the iodine compounds. As a means of restoring diseased mucous membranes to the normal state he considers it unequaled.

Isaia (63, Apr.) finds europhen a fair substitute for iodoform in milder lesions of the nose and pharynx, but not for the long standing severe cases. He does not consider parachlorophenol satisfactory in laryngeal tuberculosis. The effects of iodothyrin (Bayer) in parenchymatous goitre were good.

F. Hoelscher (abst. I, Aug.) still maintains the efficacy of the treatment of respiratory diseases, chronic and acute, by *guaiacol* and its derivatives. He claims excellent results in pneumonia from *creosotal*, the disease being either aborted or much shortened in its course.

Reports from the Marseilles Hospital (I, Aug.) agree with Hoelscher's statements. It is claimed that in most cases of pneumonia and broncho-pneumonia the continuous administration of fairly large doses of *creosotal* results in a typical fall in the first twenty-four hours. Relapses and sequelæ are absent. Neither cardiac affections nor albuminuria contraindicate its use.

The subject of the healing power of the solar rays has attracted much attention during the year. A. Abrams (120. Mar.) reports his experiments in this line. After giving in detail his methods of investigation, he presents the following as his conclusions in regard to the power of penetration of the solar rays: I. Solar rays will penetrate to a varying depth the dead tissues, but more readily the living tissues, so far as their actinic effects are concerned. 2. A dry skin is very resistant to the penetration of the rays. 3. The solar rays penetrate better if the skin be moistened after anointing with lanolin. 4. The maximum effects are only secured by inunction with lanolin and the subcutaneous injection of distilled water, the surface of the skin being moistened during the action of the rays. In using the rays therapeutically a large lens was used, but care was taken not to concentrate to such a degree as to burn. Three cases of laryngeal tuberculosis treated by this method are reported, in which improvement seemed quite marked. The rays were used reflected from a laryngeal mirror. A tubercular ulcer of the palate was healed in three weeks. Tubercular ulcers on the surface of the body healed rapidly.

W. A. Wells (17, Apr. 15) reports good results from the use of *thiol* in various nose and throat diseases. He prefers

it to ichthyol on account of the absence of offensive odor. He finds it especially valuable in acute throat inflammations in persons of a gouty habit, and in chronic inflammation of the nose and throat of the intumescent type. In atrophic cases his results were not good. He uses a 2 per cent solution in water for spraying and a 10 per cent in glycerine for the brush.

L. Koplinski (72, Feb. 25) gives an account of an alarming case of *hiccough*, in which complete relief was obtained by firm *pressure on the tongue* by means of a large spoon handle. Gargling with *ice water* is also recommended as an excellent remedy in this condition.

Heroin has received considerable notice during the year as a new anodyne remedy in coughs and other conditions of irritation in the mucous membrane of the respiratory tract. A. Holtkamp (abst. 1, Oct.) has employed heroin He states "this remedy has comin more than 180 cases. pletely fulfilled expectations in all cases in which it was indicated, and has never manifested unpleasant or injurious effects." He used heroin in 122 cases of acute and chronic laryngitis and bronchitis, twelve cases of pleuritis, with irritating cough and intense chest pains, also in five cases of whooping cough, and had successful results in nearly all In adults he gave one-twelfth grain three times daily, in severe cases an additional dose forenoon and afternoon. and if the night's rest was disturbed the evening dose was doubled. In four of the children with whooping cough the paroxysms were considerably bettered, both as to frequency and intensity. He found children easily affected by the drug and advises care in the dosage.

Manges (6, Nov. 26, '98) finds heroin useful and reliable in coughs and pain in acute and subacute catarrhal inflammations of the respiratory tract. He used tablet triturates containing one-twelfth and one-sixth grain, this being the dose recommended by observers generally.

Leo (18, Mar. 23) has had good results from the remedy in severe emphysema, chronic bronchitis and bronchial asthma.

C. Herwisch (16, Nov.), after three months' use of heroin in acute and chronic bronchitis and in the cough of phthisis, finds it a useful remedy and has had no unpleasant results.

M. Einhorn (17. Oct. 28) is in virtual agreement with the above as to the uses and value of heroin.

Some, however, have found objections to the use of the drug. Harnack (13, July 4) considers it much more dangerous than morphine, and thinks the dose used is too large. He thinks there is danger of a habit from its use. E. Mayer (1, Mar.) states that he had found complaints of tinnitus aurium on the part of some patients to whom heroin had been given.

Alexander (5½, B. 9, H. 1), in a paper on the therapeutics of protargol, gives the results of his experience with it in rhino-laryngologic practice. In acute cases he finds it worthless, in chronic diseases very valuable. Chronic pharyngitis and atrophic rhinitis are much improved under a 1 per cent solution. His most brilliant results have been obtained in empyema of the antrum, in which he uses a 5 per cent solution. He also claims astonishing results in hay fever from painting the affected tissue with a one-half per cent solution. No irritation results from the use of the remedy in ordinary strengths.

Guttmann (6, June 17) concludes that *holocain* is not ordinarily suitable for anesthesia in nose or throat work, on account of the hemorrhage.

Beta-eucain finds a number of supporters during the year, the chief advantages claimed for it, as compared with cocain, being its relatively less toxicity, easy preservation of solutions and constancy of action. Some have found that

solutions very largely lose in anesthetic power after standing a month or longer; observers generally have not found this objection.

R. H. Peck (7, Sept. 9) has a good article comparing the action of eucain with that of cocain. G. G. Hamilton (8, Aug. 26) also presents the merits of Eucain B., urging its use, not only instead of cocain but as far as possible in place of a general anesthetic.

It is now claimed that solutions of *cocain may be boiled* without losing their anesthetic qualities, but it is suggested that it may increase the toxic effect of the drug.

A case of *poisoning* from the use of *cocain* in the larynx is given in 2, April.

Legrand (13, No. 21) recommends the following solution of cocain for hypodermic use:

Gelatin	2.
Nat. chlorat	0.7
Acid. carbol., crude	0.1
Eucain mur	0.7
Cocain mur	0.3
Aq. destill	

Mentho-Phenol-Cocain.—A. Bonain (abst. 4, Oct.) recommends a solution of cocain in menthol and carbolic acid for anesthesia in nose and throat work. Crystals of menthol and carbolic acid mixed, form a liquid in which the cocain readily dissolves. B. uses the following formulæ:

I.	Acid. carbol	1.0
2.	Acid. carbol	

No. I will produce anesthesia in localities where cocain alone fails to act well, such as the nasal vestibule, adenoid tissue in the oro-pharynx, and at the base of the tongue, but it may be used in any operative work in the nose or on the epiglottis and arytenoid eminences. It is especially useful in the dysphagia of ulcerative tubercular laryngitis, producing complete anesthesia, which has lasted as long as four days. The caustic solution he uses in destroying tubercular vegetations, using a little cocain first.

Orthoform.—The reports on the use of this drug in nose and throat work during the year have been almost uniformly favorable; samples of such reports will be found under the various headings. A few, however, have had unpleasant experiences with its use. Brocq (82, No. 30, Apr., abst. 17) has found orthoform sometimes very irritating to the skin, exciting hyperemia and pruritus. In one case a one-to-forty ointment, used on the face, caused swelling and redness, lasting nearly three weeks. In some instances it seemed to have an effect very much like that of pure carbolic acid.

Asam (13, Feb. 21) has not found orthoform always satisfactory. In nine cases it produced inflammatory phenomena at the point of application and in two at a distance. Favorable effects were obtained at first, but after three to fourteen days the unpleasant symptoms developed. Basic orthoform was used.

Miodowsky (13, Mar. 21) reports the occurrence of moist gangrene, following the application of a 5 per cent ointment to a leg ulcer in a woman of sixty-eight. Discontinuance of the orthoform, rest in bed and a boro-salicylic acid paste resulted in cure.

Nirvanin, the chloride of orthoform, has received some notice as a local anesthetic. A. Luzenberger (13, Jan. 3 and 10) used it in 134 operations, requiring infiltration

and regional anesthesia. He recommends it highly as a non-toxic, effective and convenient substitute for cocain. The solutions keep clear, have an antiseptic effect and may be sterilized without loss of anesthetic properties. Einhorn and Heinz (abst. 141, Mar.) found that *nirvanin* in 5 per cent solution was non-irritating to not very sensitive mucous membranes, but that the anesthesia obtained was not deep-seated enough to permit of painless operations on the deeper layers. It may be used in 10 per cent solution. When injected beneath the surface, however, or applied to wounds or sores, persistent and complete anesthesia is obtained. It may be injected to the extent of eight grains.

. Nosophen and antinosine still retain favor as substitutes for iodoform.

H. C. Wood recommends the following in influenza:

Antipyrin	grains.
Pilocarpin mur $\frac{1}{2}$	grain.
Tinct. aconite8	drops.
Water	ounces.

Of this a tablespoonful is to be taken, followed by a hot general bath or foot bath lasting ten minutes; after this the patient is put to bed and a dessertspoonful of the mixture is given in a glass of hot toddy, to be repeated in twenty minutes unless sweating occurs before. If morphine agrees with the patient one-sixth grain may be added to the mixture in case of much pain.

Milian (82, Sept. 30, abst. 2) had a patient, a woman of forty-three, in whom the ingestion of six grammes of potassium iodide daily for six days produced *iodism*, with the following symptoms: Acute burning sensation in the palate; exudation of a sanguinolent fluid, with no tendency to coagulate; ecchymosis and large submucous hemorrhage in the palate. The symptoms appeared and disappeared with the use or suspension of the iodide.

- W. Freudenthal (6, Dec. 10, '98) has had success in asphyxiation during chloroform narcosis from *irritating the epiglottis* with the finger passed into the mouth. He succeeded in restoring respiration in this manner several times in one very threatening case.
- D. Roy (70, Aug. 19) points out various abuses in the present treatment of nose and throat cases. He objects to the indiscriminate use of the spray and considers the use of the oily spray illogical except in acute inflammatory conditions after cleansing. He also believes that the electrocautery is many times wrongfully used, especially condemning it in intumescence of the turbinates without hypertrophy. He thinks that oftentimes more inconvenience results from the removal of a small cartilaginous or bony spur than the spur itself caused.

Coryza.—Massauer (abst. 141, Mar.) advises the use of a weak solution of permanganate of potassium as a douche or snuff, then insert a pledget of cotton, soaked in the solution and allow to remain one hour. He claims this treatment to effectively abort the cold. C. F. Theissen (37, Jan.) uses the following treatment: After the patient washes or sprays the nose with a lukewarm alkaline solution he insufflates about three grains of the following powder two or three times daily:

Sod, bicarb.	
Sod. biborataa gr. xv	V
Amyligr. v	V.
Acaciae 3	j
Nosophenq.s. ad 3	j
M. S.—As a snuff.	

Rethi (15, Oct. 22, abst. 2) discusses the negative airdouche as an aid in diagnosis and treatment of diseases of the nasal accessory cavities. He agrees with Seifert (see p. 33) as to the usefulness of the method. As other methods of diagnosis, such as by position, transillumination, probing and syringing, are often not sufficient to establish the diagnosis, the surgeon often proceeds to operative measures to determine the condition. R. objects to surgical interference for this purpose as being unnecessarily severe and urges the use of the negative air-douche under such circumstances. His experience with the method has extended over one and a half years. His method is the same as Seifert's. Having cleared the nose of any polypi present, cocain is applied to the hiatus and all secretions carefully wiped away. The air bag is then compressed and the nozzle placed in the nose, both sides being closed in the usual manner. The patient now swallows and at the same moment the bag is allowed to expand suddenly. Careful inspection will now usually reveal secretion at the affected orifice. Sometimes potassium iodide is given for a few days to increase secretion. Since adopting this method Rethi finds that if it is negative the other meth-He finds the systematic use of this method ods are also. quite satisfactory therapeutically, in that it relieves the patient, as a rule, of the effects of retention.

SUPRARENAL EXTRACT.

The use of the suprarenal gland, which was only introduced two or three years ago, has become quite general within the past year, its marked power of producing local ischemia when applied to the various mucous surfaces giving it a place unoccupied hitherto by any drug except cocain. It is, however, much more potent as a constrictor of the small blood vessels than cocain and has none of the poisonous qualities of the latter.

J. E. Newcomb (1, Jan.) gives an exhaustive article on the subject of the suprarenal gland. The effects of injection of the extract of the suprarenal gland into the veins of living animals (Schaefer and Oliver, Cybulski and Symonowicz) are given as follows: I. Extreme contraction of the arteries, shown to be of peripheral origin. 2. A remarkable and rapid rise of blood pressure, which took place in spite of powerful cardiac inhibition, and which was further augmented if the vagi were cut or the inhibitory nerves of the heart were paralyzed by atropin. 3. Central vagus stimulation so pronounced that the auricles came to a standstill for a time, while the ventricles continued to contract, but with slow independent rhythm. 4. Great acceleration and augmentation of contraction of the auricles and ventricles after section of the vagi, the auricular augmentation being especially marked. 5. Respiration is only slightly affected, becoming more shallow. The effect lasts but a few minutes. Newcomb quotes the following conclusions from H. L. Swain (6, Dec. 24, '98): 1. The aqueous extract of suprarenal gland is a powerful local vasoconstrictor agent and a contractor of erectile tissue. It can be used in very considerable amounts without dangerous or evil effects locally or constitutionally. 2. The effect can be reproduced any number of times, apparently without evil effect or formation of a habit in either tissue or individual. 3. Use of the extract seems to heighten the effect of any other drug used locally. 4. In acute congestions it has its widest application and greatest opportunity for good, but it is also very helpful in certain chronic conditions of the hay fever type. Newcomb corroborates these conclusions of Swain.

Mullen (7, May 20) has used suprarenal extract for two years in many eye, nose and throat cases. He uses Armour's extract, which he describes as being in scales like pepsin, but quite brown. [Now prepared as simply desiccated gland in powder form of gray color.] He makes a solution of five grains of the extract in one dram of water, with one grain of carbolic acid added. The solution has absolutely no anesthetic effect, but acts solely as an ischemic agent by contracting the capillaries. In operations M. uses a 5 per cent

solution of cocain ten minutes before, then the suprarenal is applied for five minutes, when the part is ready for operation. The action of the extract begins in one-half minute and lasts from one-half an hour to three hours. It has no action on the skin. Is not at all irritating and there seem to be no bad effects. It prolongs the period of cocain anesthesia apparently by reason of the prevention of hemorrhage. M. uses it to abort coryza, using atropia to keep up the effect. Also finds it useful in hay fever. He thinks the operated parts heal quicker after its use. He believes it to antidote cocain poisoning in some measure, as he has never had any poisonous effects from cocain since using the adrenals. He uses it for acute laryngitis and for any acute inflammation of nose or throat in which relief of pressure is desired.

Many other articles by other investigators have appeared, whose conclusions all agree essentially with those quoted. Lederman (1, Apr.) uses a solution in one part glycerine and three parts water. His directions are, put ten grains of the desiccated gland into one dram of the glycerine Four to eight drams of such mixture is placed in a wide-mouthed bottle and well shaken. Then allow to stand in a room at the ordinary temperature (68 degrees) for forty-eight hours, shaking occasionally. Then filter through ordinary filter paper into a clean bottle and keep Remove a little from the bottle for use at each sitting and the remainder will keep for some days. L. considers that other antiseptics hinder the action of the gland.

A saturated solution of boric acid in water is, however, recommended by others as a menstruum in making a solution of the gland for use.

The properties of the extract would suggest its use in obstinate epistaxis, and Lermitte (9, Feb. 25) reports a case in which he so used it with success.

Solis-Cohen recommends a five-grain tabloid of the dried gland five times daily, internally, for hay asthma.

- H. O. Reik (17, Feb. 4) has had perfect success in sterilizing small instruments by formaldehyde. He uses an airtight copper sterilizer of about 1,000 cubic inches' capacity and finds that ten minutes' exposure to the gas generated from a five-grain paraform tablet by an alcohol lamp is sufficient for sterilization. For the diphtheria bacillus fifteen minutes is a safer time.
- H. M. Thomas (7, Feb. 18) has proven by his experiments that the *essential oils*, when nebulized and inhaled, *reach the alveoli* and every portion of the lungs which air enters. The subject is quite fully discussed by Johnson, Ballenger and Gradle (7, Feb. 18).

Argyria.—Menzel (14, No. 20) gives the history of a case resulting from frequent painting of the pharynx and larynx with 5 to 10 per cent solutions of nitrate of silver during a period of nine and one-half years. Discoloration was marked, and the patient was irritable, restless and sleepless when the silver was not applied for any lengthy period.

ANESTHETICS.

Ethyl Bromide.—Kempter (72, Sept. 2) writes on this subject. He uses a crash towel, used in cone-shape, covered with paper, the full dose—one to two and a half drachms in children, two to three drachms in adults—is put into the cone at once and the cone pressed down over the patient's nose and mouth. It must not be removed till anesthesia occurs, which is usually about one minute. It seems in some cases as though the patient were being asphyxiated, and to hold the cone over the face of a struggling patient seems a rather barbarous thing to do, but it is the only way in which safe anesthesia can be obtained with the substance in question. Nausea and vomiting are of rare occurrence

during the time of administration and anesthesia. As a rule neither heart beat nor pulse is influenced, except during the stage of administration, at which time it is probably due to fear and the struggling of the patient. Deep anesthesia lasts one and a half to two minutes, and the patient awakes suddenly with clear brain. From reports made at the annual surgical congress in Berlin, from 1890 to 1897, the mortality rate is found to be 1 in 5,228. From the same reports the rate for chloroform is 1 in 2,023, for ether 1 in 5,090. comparison of these figures is favorable to ethyl bromide, but when it is considered that its period of administration and anesthesia combined is only three minutes, while the average for the other two substances is probably considerably more than thirty minutes, taking all operations together, the interpretation of the full meaning of the statistics must certainly prove either of the other two to be far less noxious to the human organism than is ethyl bromide. However, as it is unfair to deduce too much from statistics, it is quite likely that ethyl bromide is a less harmful substance than might appear.]

Kempter gives the following hints for the safe use of this anesthetic: The adult dose should not exceed three drachms. The inhaler should be applied immediately and retained to the patient's nose and mouth till full anesthesia is induced (the volatility of the substance and its liability to decomposition rendering it unsafe to do otherwise.) Under no circumstances should the inhaler be removed for the purpose of prolonging the anesthesia. A fresh preparation must be used, exposure to light and air causing changes which render ethyl bromide more toxic.

Haight, Knapp and others are on record during the year as favoring the use of this anesthetic in minor operations.

Chloroform has fallen very much into disfavor during the year (see under adenoids).

Nitrous oxide gas has had some advocates, particularly

when combined with oxygen, but the period of anesthesia is too brief for very satisfactory work.

Schleich's mixture has had some articles in its favor, but a number who have tried it have found nothing to recommend it after considerable use.

In a report on operations for adenoids and enlarged tonsils during four years' service at the Hospital for Sick Children, D. J. G. Wishart (Dominion Med. Jour., Sept.) gives a table of 103 operations. Of the 103 patients two died from the effects of the anesthetic. As he states that "chloroform was preferred for these operations," it is natural to infer that the deaths occurred under its use. If such was the case it is a very strong argument against its use in such cases.

NEW INSTRUMENTS.

Many new instruments and modifications of old ones have been described in the journals during the year, while a reference to the circulars and trade lists of the instrument makers shows that only a very few of the whole number of new or improved instruments have been made the subjects of journal articles. Of the latter a brief description of some of the more useful ones is here given, with a reference to the original article and illustration for a more complete understanding of their character.

Director for Nasal Infundibulum, acting without withdrawal as curette and thread-carrier. L. Browne (2, Jan.), accompanied by illustration.

Improved Infundibulum Drainage-tube. L. Browne (2, Jan.). Illustrations. In this the tube is made on the pattern of Luc's instrument, but the cup is not so large and its walls thinner, so that it may be removed with much less force than the Luc tube.

An Improved Tube for drainage of the maxillary sinus.

J. C. Mulhall (1, Nov., '98). Illustrated. A metal tube one-fourth of an inch in diameter, with antral end beveled and having a movable lid attached to the oval end of the tube, the tube being held in place by a band attached to a tooth.

Hot Air Syringe. Vansant (17, Sept. 9). Illustrated. Consists of a small chamber containing a piece of carbon. This chamber is held over a flame until heated. The air enters the chamber from behind and passes off through a nozzle anteriorly. The nozzle has various tips. A vulcanite handle projects down from the posterior air tube.

Adjustable Curette for the posterior end of the lower turbinal. L. Katz (80, Jan. 30, abst. 1, Apr.). So arranged that after introduction the curette may be brought up to form an obtuse angle with the handle. For use in those cases in which the posterior swelling is too small to engage in the snare.

Adjustable Caustic Carrier for the posterior end of the lower turbinals. A small shallow plate attached to the handle by a joint and admitting of being flexed to any angle by a trigger at the opposite end of the handle.

A New Nasal Septometer. E. Pynchon (1, Dec.). Illustrated. Two noncrossing arms, each about six inches in length, are pivoted at their exact centers, so the motion of the pointed or index finger of one blade upon the graduated scale on the other blade will show precisely the distance between the opposite or distal ends of the tapering arms lying on either side of the septum.

A Modified Krause Curette. C. G. Coakley (1, Mar.). Intended to hold the curette on the tumor so that as large a piece as desired may be removed.

New Tracheotomy-tube. G. L. Richards (2, Jan.). The tube is elliptical in shape and straight, the long diameter being about twice the short diameter, and the lower portion, from before backwards, being longer than the upper, inasmuch as the trachea itself lies farther from the surface the

nearer it approaches the chest. There is an inner and outer tube, as usual. It is intended to enter the trachea about a quarter of an inch, and is held in place by a tape fastened round the neck. It is especially intended for cases of low tracheotomy, where a tube must be worn for a long time. It had been used in a case several months with comfort.

A new Laryngo-stroboscope (5, B. 7, H. 1, abst. 2, Nov.). Differs from Oertel's in its small size. In a fixed drum, which has two pairs of holes opposite one another, is a second drum of somewhat smaller diameter. The latter is connected with an electro-motor by a wire passing over the head. wall of this inner drum is also perforated, the holes being at the same height as those of the outer drum, and so arranged that three pairs of inner perforations are opposite the larger, upper and outer opening, while six pairs are opposite the smaller, lower and outer opening. Two small electric lamps, one on each side of the openings, are fixed so that their light will fall on the laryngeal mirror when in The outer drum also presents an opening oppoposition. site the inner, larger perforations, to which a short india-rubber tube is attached. The person examining takes the end of this tube in his mouth in order to blow the siren and estimate the number of revolutions from the tone. The use of the apparatus is simple. The connections having been made, the instrument is fixed on the forehead so that the eye can see the laryngeal mirror through the openings. motor is now started and the illumination is good, the vibrations of the vocal cords will be very distinctly seen.

Instrument for forced examination of the larynx in children. A. D. Blackader (Progressive Medicine, Mar.). Illustrated. A tongue depressor so curved as to adapt itself exactly to the base of the tongue. The distal extremity terminates in a blunt fork, the rounded points of which are supposed to lodge in the pyriform sinuses. The tongue, and with it the rima glottidis, may thus be pulled forward.

Intubation Instrument. C. J. Whalen (7, June 24). Illustrated. Combines introducer and extractor in one instrument. Planned after the French pattern, but with longer blades for holding the tube, and a greater curve.

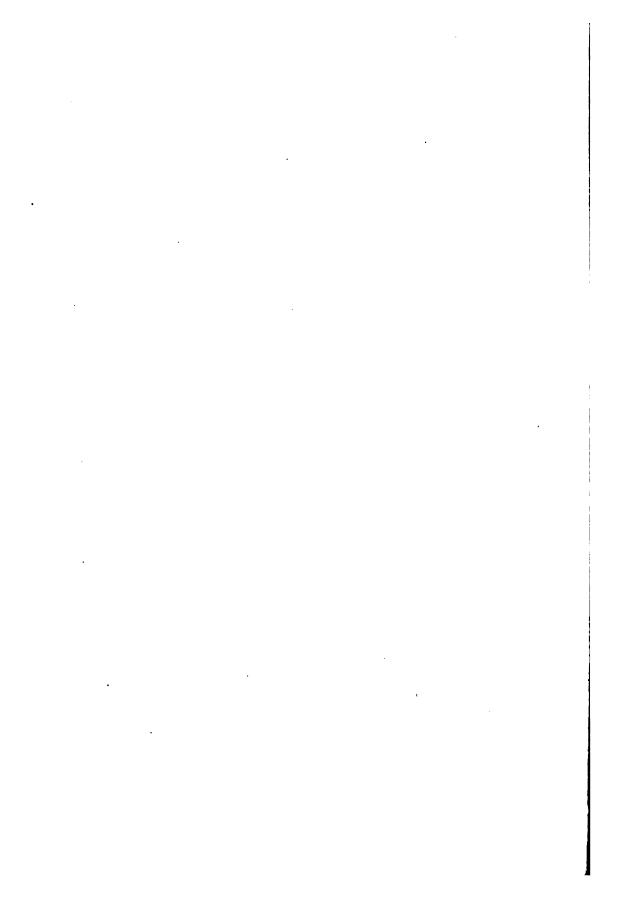
Intubation Instruments. A very simple set of instruments, handled by Betz, Chicago, has introducers of three sizes for the different ages, the introducer being also the extractor. The blades of the instruments are joined at the end and separated above, making them easy of introduction and still getting a very firm grasp of the tube. It is the greatest improvement over the O'Dwyer instrument yet seen by the writer.

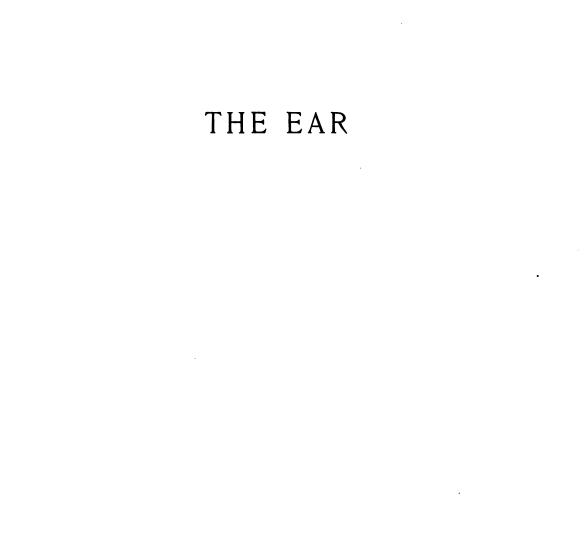
A new Velum Retractor. Malm (abst. 2, Apr.). On the pattern of Belloc's sound, curved at the extremity, carrying a central sliding rod, to the end of which are attached two curved springs, which diverge when thrust out of the cannula. The instrument is passed through the nose and the sliding rod pushed home, causing the ends of the springs to appear on either side of the uvula. After adjustment it is kept in position by a ring pressing on the upper lip.

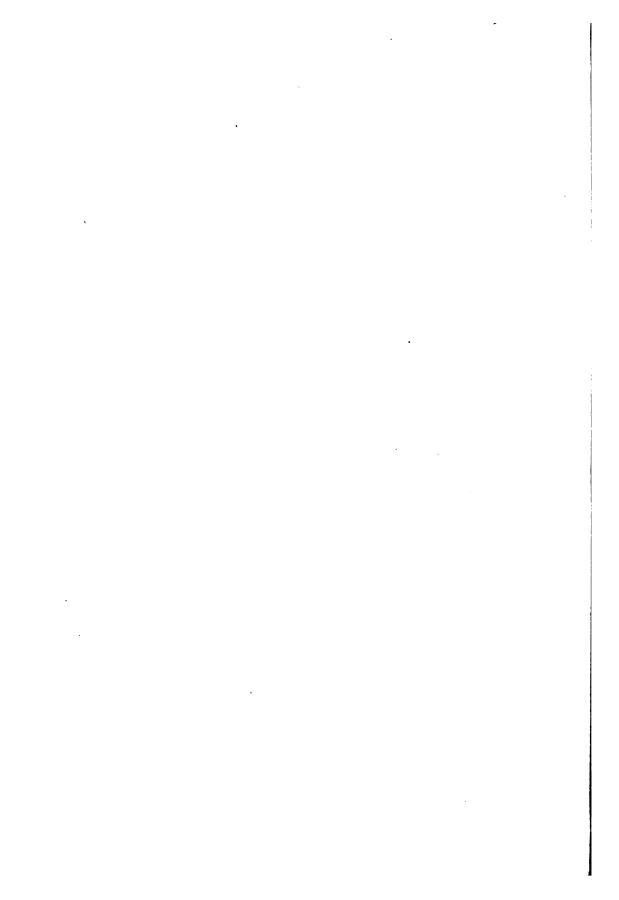
A Resectotome for the Tonsils. Breitung (13, Jan. 10, abst. 1, April). Consists of a blade cutting from behind forward and operated by a wire drawn through the cannula of a Krause's snare.

A Spirit Lamp with Draught Excluder. (2, May). Illustrated.

A Spray Warmer. H. B. Bryson (Homeo. Eye, Ear and Throat Jour., Jan.). Illustrated. Heated by an incandescent lamp, attached to street current, and having six holes for spray tubes.







INTRODUCTION.

The otological literature of the past year comprises a revision of the textbook on Diseases of the Ear by Dench, a section on Otology in the American Text Book of Diseases of the Eye, Ear, Nose and Throat, a small section on Otology in Vol. 1, Progressive Medicine, several monographs and about four hundred journal articles. Textbooks by Bishop, by Bacon and Blake and by Buck which came out late in the previous year may be included in the recent literature. While there are no remarkable discoveries to record, the literature indicates a constantly increasing interest in the subject. principles of otology are apparently becoming more fixed in the minds of specialists, while the subject seems to be gradually approaching its proper relative importance in the mind of the general practitioner. of prophy-The value laxis and of early treatment has emphasized been by many writers. In the treatment of the simple and hypertrophic forms of middle ear inflammation considerable progress has been made. Several new plans and procedures have been devised for the treatment of sclerosis, but much is yet to be accomplished before the treatment of this condition can be classed as successful. Concerning suppurative otitis media and its complications, a better understanding of the pathological conditions underlying the lesions and more accuracy in diagnosis seem to have brought the profession into greater accord on questions of treatment. In the management of brain and sinus diseases of otitic origin decided progress has been noted, though it is believed that earlier diagnosis, with improved methods of operation, will yet not only lessen the frequency of the complication, but will materially reduce the mortality when these parts become in-While the current literature of any year must necessarily be to some extent a repetition of that which has preceded, the year 1899 must be credited with its full share of that which is new and original in otology.

PHYSIOLOGY.

The generally accepted theory that sound waves are transmitted from the drum membrane to the internal ear, through the chain of ossicles, finds an opponent in W. F. Cole (I, Aug.), who, after conducting a series of experiments, asserts that the ossicles have nothing to do with the transmission of sound waves. He believes that the air in the tympanic cavity is the medium of transmission and that the labyrinth receives the impression through the fenestra rotunda. In the absence of the membrane and ossicles the impairment of hearing is accounted for by the fact that the auditory canal terminates in an enlarged cavity, which does not concentrate the sound waves upon the membrana secundaria.

In proof of the latter theory a number of cases are cited, showing that, in the absence of the membrane and ossicles, the hearing is improved by cutting off the sound waves from the attic. In a number of such cases the attic and anterior tympanic cavity was filled with wet cotton wool in such a way as to make a continuous canal to the fenestra rotunda. In all the cases the hearing was greatly improved, and in some it was brought up almost or quite to normal.

These experiments led Dr. Cole to devise a soft rubber funnel for concentrating the sound waves upon the fenestra rotunda. The funnel is expected to fit snugly into the auditory canal, and its smaller end is so cut as to adapt itself accurately to the inner wall of the tympanum around the fenestra.

EXTERNAL EAR.

B. A. Randall (7, Mar. 4) finds that affections of the external ear make up fully 25 per cent of all ear diseases. He estimates the percentages of the different diseased conditions of the external ear, as follows: Impacted cerumen about 56 per cent. Diffused inflammation of the auricle and canal, which may be called eczematous, about 5 per cent. Furunculosis about 2 per cent. Other diseases about 4 per cent.

Congenital and Acquired Deformities of the Ear.— Stetter (154, Vol. ii, No. 9, '98) deals at length with this subject, especially with congenital abnormalities of the external ear. (Abstract I, Apr.) The various defects are noted and the operations devised for their removal are described. Absence or occlusion of the external auditory canal is most generally accompanied by structural defects in the middle and internal ear, so that an operation is usually fruitless. The middle ear is sometimes completely filled with bony growth, so that it is, in fact, obliterated. Deformity of the drumhead alone is very rare, and those cases of reported congenital perforation are to be looked on with suspicion, as pathological processes may bring about the condition very early in life.

Abnormalities of the ossicles and of the muscles attached to them are of rather frequent occurrence. Quite a number of cases are reported where the Eustachian tube is said to have been very much altered in its caliber, even to the point of obliteration. But so experienced an aurist as Gruber affirms

that these defects are the result of early disease, perhaps even of intrauterine inflammation.

The cavities of the mastoid vary so widely, and that within the bounds of normality, that it is very difficult to point out an undoubted deformity. The defects of the internal ear are largely influenced by heredity. The structures may be absolutely wanting. Again, the cochlea may present a varying number of spirals. The semicircular canals may be wanting in whole or in part. They may be dilated or narrowed. The aqueductus vestibuli may be enormously dilated or it may exist in duplicate.

The acquired deformities of the external ear may take on almost any form, as a result of phlegmonous inflammation, or of perichondritis. The author reports a case where all of the cartilages seemed to have undergone ossification.

Haug has recently reported a case of elephantiasis, The affected ear measured $12\frac{1}{2}$ ctm. in length, 7 ctm. in breadth and 23 ctm. in circumference, while the corresponding measurements of its fellow were 5, $3\frac{1}{2}$ and 10 ctm.

The most important deformities of the external ear are those which result in atresia of the canal. This may result from burns or any inflammation that is followed by much scar tissue. Wounds of various kinds, particularly those resulting from unskillful attempts at extracting a foreign body, may lead to atresia.

In the drumhead the most common abnormality is the perforation, although thickenings and scars are frequently met with.

In the middle ear all kinds of changes and defects—even to total destruction—may result from chronic inflammation or tumors; and the same may be said of the internal ear.

Auricle.—R. Henke (19, Feb.) contributes an article on malformations of the auricle and reports in detail a number of cases.

Malignant Tumors of Auricle.-Three cases of epitheli-

oma of the external ear are reported by Starr (56, Vol. iv, No. 1). In the first case, a male, aged fifty-eight years, the tumor was situated on the helix. It was of ten months' duration and extended to the bottom of the concha. The surface was ulcerating. The mass was removed with a V-shaped piece of the auricle, extending well beyond its margins. The growth did not recur.

In the second case, a male, aged eighty-two years, the tumor was situated on the base of the lobule, and extended to the bottom of the antihelix and involved the tragus. The growth was removed and the lobule was sutured to the remainder of the pinna. Recovery was good. No recurrence.

In the third case, a male, aged eighty-four, a cauliflower-like fungating growth, about the size of a pigeon's egg, presented at the external meatus. Its apparent origin was in the concha. There was marked pain and tenderness. Operation was refused.

AUDITORY CANAL.

Malformations.—Hartmann of Berlin (2, Nov.) contributes a paper on congenital and acquired atresia of the external auditory canal. He finds congenital much more common than acquired atresia. He reports a case of complete bony occlusion of both external auditory canals, following a diphtheritic-scarlatinal otitis. The ossicles of both ears had come away. Sufficient hearing power remained to prevent deaf-mutism. On one side the meatus was restored by operation. The auricle was turned forward and the new formed bone was chiseled away. The meatus was covered by means of Koerner's flaps. The healing process was slow. Hearing was considerably improved.

Rutten (2, Nov.) describes an *exostosis* of the external auditory canal of unusual size. It completely filled the canal and measured fifteen millimeters in length and twelve milli-

meters in thickness. It developed from the posterior superior wall of the canal. Pressure of its apex on the opposite wall caused an osteo-periostitis, and the pus formed in this inflammatory process was retained in the canal and middle ear. The exostosis was removed with the gouge through the external meatus. Hearing was immediately restored and the otorrhea cured. Rutten had examined the growth seven years before and from the progress it had made he thinks it must have been present fifteen or twenty years.

F. Faulder White (9, Dec. 24, '98) reports a case of chronic suppurative otitis media, in which the flow was obstructed by a growth of fibro-cartilage from the posterior wall of the meatus. After removal with the knife and scissors there was a tendency to recur, which the application of the knife and nitrate of silver relieved in a few weeks.

A case of double external auditory canal is reported by Guranowski (11, Jan. 14). A vertical plate of cartilage, covered with skin, divided the canal into two parts. The anterior canal ended in a cul-de-sac. The posterior formed the external auditory canal proper and led to an apparently normal drum membrane and middle ear.

Eulenstein (128, Vol. xxviii, No.1) describes a case of movable, spongy osteoma of the cartilaginous portion of the external auditory canal. The patient was a man aged thirty-six. The meatus was reduced to a slit, owing to the presence of a tumor which was covered with normal epidermis. The tumor was movable, could be rotated, and the probe could be passed around it. After removal of the tumor with the snare its attachment was seen to have been in the cartilaginous portion of the meatus. The mass was about the size of a pea and resembled medullated bone. Under the microscope it was found to be a typical osteoma, with mucous medulla.

Foreign Bodies in Auditory Canal.—Harold Gifford (39, Oct. 15, '98) reports a case in which a child was said to have put two glass beads into the ear.

The family physician had removed one after considerable effort, and had tried to remove the other.

When the pinna and cartilaginous canal were cut loose posteriorly, the drum membrane was found destroyed. The promontory was denuded and had evidently been mistaken for the second bead. Later it was discovered that only one bead had been put into the ear.

M. A. Goldstein (93, Feb.) reports two cases of foreign body in the ears of children, where a physician had used vigorous efforts to remove the substances and seriously damaged the deep structures. This leads him to conclude that:

First.—The removal of a foreign body from the external auditory canal should not be attempted without proper and delicate instruments and should not be undertaken by inexperienced persons.

Second.—In the removal of foreign bodies from the ear where the mass is firmly impacted or tightly held by the narrow confines of the canal, and where some difficulty in the removal of the same is anticipated, the most advisable procedure to prevent restlessness on the part of the patient with movement of the head and possible injury to the parts during the operation is a moderate chloroform narcosis.

In injuries of the external auditor meatus Burnett (Vol. xxviii, No. 2) emphasizes the importance of preserving the lumen of the canal.

Furuncles.—In the treatment of furuncles of the external auditory canal W. Laymann of St. Petersburg (19, Feb.) uses a tampon of cotton-wool, saturated with an ointment composed of oxide of zinc forty parts, carbolic acid six parts, vaseline 300 parts. The tampon is made of uniform diameter, large enough to fit tightly into the canal. The inner end is cut square across. After thoroughly saturating the tampon with the ointment (warmed) it is pushed into the canal with a screwing motion, and left for twenty-four hours. It is to be renewed as required.

Otomycosis.—In the treatment of otomycosis Samuel Theobald (161, Vol. vii, No. 11) removes the aspergillus with the syringe, probe and forceps. Then he dusts the canal with a powder composed of equal parts of boric acid and oxide of zinc. He has never seen the above treatment fail.

W. A. Martin of San Francisco (1, Mar.) reports a case of scalding of the membrane, canal and tragus with hot oil. The oil was heated in a teaspoon over a lamp and poured into the ear for the relief of earache. Large blebs formed on the tragus and in the canal. The drum membrane was concealed by a bleb that filled the inner third of the canal. This ruptured on being touched with a probe and about a drachm of serous fluid escaped. The parts were dried and dusted with iodoform. Considerable necrotic tissue was exfoliated during the next two weeks, but at no time was there any formation of pus. When the field was finally clear there was a large, kidney-shaped perforation in the lower half of the membrane. The lower half of the hammer projected into the opening. The perforation closed completely and no appreciable loss of hearing resulted.

DRUM MEMBRANE.

Potts and Randall (7, Mar. 4) contribute an article on Drumhead Perforations, Their Site and Significance (3, Aug.). The authors give the result of a study of one thousand cases from private and clinical record books. The findings are conflicting with those of Moos and other writers, in that the large proportion of perforations was found in the lower posterior quadrant. The statistics of actual perforations from private records, with their larger proportion of acute cases, have as large a per cent in the upper and posterior quadrant (38 per cent), which is 16.4 per cent of the whole number.

As regards the Shrapnell region above the short process,

the presence here of a discharging opening in the flaccid membrane in 10 per cent of the cases fully accords with what has been urged as to the dry pinhole "foramen of Rivinus" at this point, which has been found in 25 per cent of adults, although never seen in early life. Bad as are the severe cases of attic and antrum disease with perforations at these points, there is no sense in including under their ill-repute the many cases which are of no exceptional severity, and in no need of radical treatment by operation.

The anterior-inferior perforation, commonly stated to be the most usual, appears in but 25 per cent of the cases. The authors take a very conservative view of the perforation of Shrapnell's membrane. When one sees such cases by the hundred and secures more satisfactory results without operation than reliable men gain from their ossicular excisions, it is easy to see that more room yet remains for conservative and thorough-going treatment.

Closing Perforations of Membrani Tympani.—Peltesohn (80, Apr. 17) describes the method of Okuneff in closing perforations of the membrane. Trichloracetic acid is applied to the edges of the perforation by means of a minute pledget of cotton on an aural application. A very small amount of the acid must be used. Satisfactory results are recorded.

A. Lewy (162, May) reviews the results obtained in the use of trichloracetic acid in the treatment of chronic suppurative otitis media and in the closure of perforations of the membrane. The acid is found especially useful in the destruction of granulations, and in infiltration of the mucous lining of the tympanum. The reddened, congested mucous membrane, under the use of the acid, rapidly loses its porosity and purple-red color, and assumes a healthy appearance.

In old perforations with smooth, thickened edges, cicatrization is encouraged by destroying the epithelial covering of the edge.

Tuberculosis of the Membrani Tympani.—Kretchmann (13, Jan. 3) has found the membrane studded with miliary tubercles. The nodules ulcerate early, producing a number of small perforations, which rapidly coalesce and the entire membrane is destroyed. This condition usually occurs late in the course of tuberculosis of some other part of the body.

Myringitis Due to Dental Disease.— Jakins (2, Nov., '98) reports a case of inflammation of the tympanic membrane which he believes to have been caused by dental pulpitis. The patient, a girl of ten years, had disease of both upper central incisions. After the nerve canals had been opened and a quantity of decomposing matter evacuated, the inflammatory condition of the membrane speedily disappeared.

Myringitis Bullosa Hemorrhagica Acuta.—James J. Carroll (4, Apr.; abstract 1, June). This affection, originally named by Politzer, is an acute, primary idiopathic affection of the drum membranes, very rare in its pure, genuine form, but more often observed as a sequel or concomitant to influenza. The author finds the most interesting feature to be the pathological appearance of the membrane. The first change is a hyperemia of the external layer, soon followed by an effusion into this tissue, and the formation of blisters, the latter appearing within a few hours after the beginning of the inflammation. They are short lived, and should the examination be made after the blisters have broken the typical appearance will not be observed. Their contents may be serum or blood, or both mixed. The desquamated epidermis is usually soon replaced, the injection of the manubrium and membrane soon disappears, but slight cloudiness of the drum and the ecchymotic spots may remain quite awhile.

The power of hearing is little or not at all impaired. Pain is sharp, stinging, piercing and may be severe enough in children to induce convulsions.

The prognosis is good, the disease usually running its

course in three to eight days. Treatment is mild and palliative. Cold applications, either by the Leiter apparatus or by ice bags, may be used. Ear drops of 5 per cent solution of cocaine or 2 per cent solution of morphia or simple warm water are indicated if the pain is very severe. The blisters, whether serous or sero-sanguinous, may be left to become absorbed or to break of themselves.

If incisions should be attempted, the exercise of skill is necessary that the entire membrana may not be perforated, lest infection be carried into the tympanic cavity. Illustrative cases are given.

MIDDLE EAR.

Acute Otitis Media.—The recent epidemics of influenza have produced an unusual amount of acute middle-ear disease, and a corresponding increase in the literature of the subject.

S. W. Smith (42, July 10) emphasizes the importance of otitis media as a complication of influenza, and calls attention to the unusual danger of this form of the disease. Early abortive treatment is advocated. Local depletion and purgation will cut short the attack in a large proportion of the cases.

In treating of the same subject, S. F. Snow (7, Nov. 25) recommends blood-letting by leeches applied in front of the tragus, and at the tip of the mastoid. If bulging of the membrane occurs it should be incised in the posterior portion, and the point of the knife should be made to scarify the mucous membrane, covering the inner wall of the tympanic cavity. This last procedure, Dr. Snow believes, does much toward preventing mastoid complications.

Theobald (72, Mar. 11) believes in the abortive treatment, when the cases are seen early, and speaks of the difficulty of preventing suppuration after the membrane is incised.

In an article entitled "The Grippe Ear," Fayette C. Ewing (157, Jan.) says that in the acute otitis media of influenza there is likely to be a hemorrhagic exudation before the membrane ruptures. In some cases he has found the middle ear filled with blood—a true hemorrhagic otitis. He calls attention to the continued pain after perforation as another characteristic.

Braislin (17, Feb. 25; abst. 3, May) believes that a great many of the ear diseases of childhood depend for their etiology upon adenoids of the naso-pharynx. The demonstration of the presence of adenoids should in every case lead to investigation of the state of the ear. Ear diseases in some degree will almost invariably be found to accompany the adenoid growth. The treatment of ear diseases should always be continued for a variable time after the removal of the adenoids. Removal of the growth checks, to a great extent, the onward progress of the ear disease, but the operation does not eliminate the requirement for subsequent treatment of the ears in suppuration, tubal obstruction or other well established pathologic conditions.

The presence of adenoids has a continual degenerating influence on the ears; while under the influence of colds or attacks of acute contagious diseases of childhood, adenoids are prone to produce active disorders.

Clark (109, Sept.) speaks of the pernicious practice of trying to stop the pain of acute otitis media by putting into the external auditory canal oils, tinctures, extracts, etc.

E. B. Gleason (38, Jan.) believes that in the earache of children, gentle inflation of the middle ear is more efficacious than either heat or cocaine. Instead of the Politzer air bag Gleason prefers two feet of rubber tubing, provided with end pieces of glass or other material, one for insertion into the patient's nostril and the other to be placed in the operator's

mouth. The child is asked to puff out his cheecks, when the operator blows gently into the tube. The nostril being otherwise closed, the air enters both middle ears. Extreme gentleness should be used in this method.

As a prophylactic of ear disease the child should be taught to blow the nose properly. Gleason's method is by means of the Politzer bag, the tip of which is inserted in one nostril and the secretion blown from the other. This procedure should be practiced two or three times daily.

- J. E. Sheppard (26, Mar.). Under normal conditions any secretion forming in the mastoid or antrum should pass through the aditus and attic to the middle ear, thence through the Eustachian tube to the naso-pharynx. When infection from the middle ear extends to the antrum swelling of the folds of mucous membrane in the middle ear shuts off the natural outlet. The result is retention of secretions and inflammatory products in the antrum and mastoid with the well-known empyemic phenomena.
- J. S. Meltzer (17, Aug. 5) points out the frequency with which earache is found in the beginning of lobar pneumonia in children. In many of the cases observed earache was a prominent symptom, but it usually disappeared within twenty-four hours. Sometimes, however, it would continue several days, but it always subsided before the pneumonia reached the crisis. In none of the cases did the pain in the ears outlast the pneumonia, nor did suppuration occur. The age of the children observed ranged from eighteen months to eight years. The earache and the pneumonia were usually on the same side. The hearing was not affected. As far as the suppuration is concerned, Meltzer's observations do not agree with those who find suppurative otitis media frequently occurring in the course of pneumonia.
- M. H. Simons (1, May) gives his observations on the effect of heavy firing on the ears of the sailors of the battle-ship Iowa. Two cases are reported of rupture of the drum

membrane from concussion. There were many cases of partial deafness and tinnitus following the use of the heavy guns. A decided naso-pharyngitis occurred in almost all the sailors, which he believes was due to the irritating gases from the burning powder. He accounts for the deafness and tinnitus on the theory that the naso-pharyngitis caused occlusion of the Eustachian tube, and the concussion drove the drum membrane inward and forced the air from the middle ear through the partially occluded tube. The impairment and tinnitus disappeared after a few days, usually after a "click," which marked the opening of the tube and the re-entrance of air to the middle ear.

II. O. Riek (72, Oct.) calls attention to the necessity of examining and treating the nose and throat of children who have frequent attacks of earache, which subside without discharging and recur upon the slightest provocation. Usually enlarged tonsils or adenoids will be found.

In the treatment of the acute inflammations of the middle ear the same author instills into the ear a few drops of a solution, containing cocaine muriate 16 gr., atropine sulph. 8 gr., to the ounce of water. He advises incision of the membrane under antiseptic precautions whenever redness and bulging of the membrane are seen.

In treating acute otitis media, G. L. Richards uses an aural bougie, which is easily applied and is valuable in aborting the attack. The formula is that of Woods of Dublin:

Acid carbolic	
Cocainegr.	
Atropine sulphgr.	3
Aquæm.	52
Gelatinegr.	
Glycerinegr. 1	58
· ·	•

To make forty-two bougies.

In size they should be no larger than will readily slip into the external auditory canal. The size as made in a urethral bougie mold has proven satisfactory. Woods reports his results in the use of these bougies as very good, and thinks that many cases of ear complication in exanthemata were saved the necessity of paracentesis. He is anxious to avoid paracentesis, when possible, on account of the danger of the entrance of micro-organisms from without, and the conversion of a serous into a purulent otitis.

For the relief of pain in acute catarrhal otitis media E. B. Gleason (50, Apr.) suggests the use of 4 per cent cocaine, applied to the posterior ends of the turbinals.

Arthur Hartman (128, Apr.) reports nine cases and discusses the relation of otitis media to intestinal diseases of infants and deduces the following conclusions:

1. Acute febrile otitis causes a diminution in weight, or arrest of increase of weight. 2. Otitis, accompanied by grave septic symptoms, probably causes diarrhea. 3. An acute febril otitis occurring during intestinal diseases may act on the general constitution, and, by reducing the vitality, aggravate the intestinal affections or retard recovery. 4. Whether there is a direct relation between atrophy and otitis, must be reserved for further observations.

A. H. Andrews (109, Dec., '98) says: Filling the external auditory canal with a 12 per cent solution of carbolic acid in glycerine is of advantage in cases of acute catarrhal otitis media. The acid acts as a local anesthetic, and as an antiseptic, destroying any germs that may be in the canal, thus lessening the liability of infecting the middle ear should perforation occur. The glycerine, by its affinity for water, extracts the moisture from the surrounding tissues. By the law of osmosis the fluid from the middle ear passes through the membrane to unite with the glycerine in the external auditory canal, thus relieving the pressure, relieving the pain and lessening the tendency to perforation. [More extended obser-

vation leads to the belief that among the remedies to be used in the abortive treatment of acute catarrhal inflammation of the middle ear glycerine and carbolic acid stand first in importance. When the fluid in the middle ear is serous in character, even though the drum membrane may be bulging, paracentesis with its consequent dangers is neither necessary nor justifiable. When the pain is due to pressure of serous fluid it will be relieved by carbolic acid and glycerine in the external auditory canal. A few drops may be put into the ear or a cotton pencil may be saturated and pushed deep into the canal.]

Acute Suppurative Otitis Media.—Some of the writers do not seem to differentiate between acute catarrhal otitis media with perforation, and acute purulent otitis media. Hence some apparent confusion of terms. In the succeeding pages it has been the intention to give the contributor's idea, rather than to correct any statements or impressions that have seemed erroneous.

In uncomplicated cases of acute middle ear suppuration Alderton (3, Vol. viii, No. 1) outlines his plan of treatment. In the inception of an acute attack he uses gentle inflation with the Politzer bag. The naso-pharynx should be disinfected. Local blood letting in robust patients is of great value. Hot douching through the external auditory canal is of importance. From a pint to a quart of hot boric or carbolic acid solution from a fountain syringe, with low pressure, should be used every two and three hours. Following each syringing the canal should be dried with cotton and closed with a small tampon. Bodily rest and plenty of sleep are of great importance. Anodynes may be necessary to secure the latter. The diet should be light. Alcohol, to-bacco and all spicy foods are interdicted.

Internally, atropine in small doses lessens tympanic secretion. Pilocarpine once or twice daily, in doses of one-twelfth to one-eighth grain, relieves vascular tension and may

be given to robust persons. Neuralgic pain about the ear is relieved by the application of liniments containing chloroform, opium, belladonna or aconite. [?]

If the above treatment fails to check the inflammation and bulging of the drum membrane occurs, it should be promptly incised, especially in cases complicating one of the exanthemata. In such cases irreparable damage is often done with appalling rapidity. Paracentesis should be performed under strict asepsis. The usual posterior inferior quadrant is the site chosen, although it is sometimes better to make the incision in the most prominent portion of the bulging membrane. Gentle inflation of the middle ear drives out the secretions. After drying the canal it should be packed lightly with a piece of antiseptic gauze, and a light cotton dressing loosely applied externally. At first the dressing should be changed twice daily. Syringing should be resorted to if the discharge continues to be profuse, or if symptoms of retention or irritation arise.

Alderton does not favor the use of dry powders in such cases, as they tend to obstruct the perforation and their antiseptic properties are slight.

In a paper entitled "The Importance of Early Detection and Treatment of Suppuration in the Tympanum and Mastoid in Acute Otitis Media," Jones of Liverpool (146, Jan.) says: The attention of surgeons has been, until quite recently, directed to the study of chronic suppuration to the comparative neglect of the acute disease and its complications. The following propositions demonstrate that, in spite of the great advances made in the surgical treatment of chronic otitis and its complications; the success obtained is not such as to warrant any slackening of our efforts to prevent acute cases from becoming chronic:

1. Once the wall of a great sinus or the dura has been penetrated, there can be no certainty of a successful issue to operative treatment.

- 2. While operations for the relief of extra-dural complications of suppurative otitis, e. g., extra-dural abscess, commencing phlebitis, mastoid abscess, cervical abscess, etc., have been invariably successful, as far as the complication itself is concerned, these operations and the radical operations for simple chronic suppurative otitis have not always resulted in cessation of the discharge, nor in restoration of the hearing power.
- 3. With the exception of tubercular cases (and even this is a doubtful exception), all cases of chronic suppurative otitis have once been cases of acute or subacute otitis media, and many of them non-suppurative otitis; moreover, the majority of these cases, by appropriate treatment during the acute stage, might have been prevented from becoming chronic.
- 4. Another and stronger reason for directing attention to the acute stage depends upon the fact that grave intracranial complications often arise during the acute stage of suppurative otitis.
- 5. The stages of acute otitis media; the point at which it becomes suppurative; the conditions which lead to involvement of the antrum and mastoid cells, and which convert an acute case into a chronic one, are not well defined.
- 6. The importance of post-nasal vegetations and of permanent perforations of the membrana tympani in causing relapses or continuous suppuration is not to be overlooked.

There is a class of cases about which there may be some difference of opinion—those, namely, in which, after ten to fourteen days, the acute symptoms have subsided, but the discharge continues and the patient is very deaf. There is no particular pain; the temperature is about normal; there is an obvious swelling of the mastoid; the meatus is swollen, occluding the view of the membrane, but there appears to be a free exit for discharge, and the patient feels comparatively well. It is here that a thorough examination is of

vital importance. The surgeon must stand behind and in front, as well as the side of the patient, and compare the ear and mastoid of the affected side with the healthy one in every particular.

Pus will be found on exploration of the mastoid cells in four cases out of five: a. If there is tenderness on tapping the base or apex of the mastoid. b. If the apex feels to be slightly prolonged on the affected side. c. If there is a slight cushiony feeling on one side, as compared with the other. d. If there is increased heat on one side. e. If, on rubbing the skin briskly on both sides, one assumes a duskier red. f. If there is pain or stiffness on moving the head from side to side, with rigidity of the sterno-mastoid.

Jones thinks there can be no harm in opening the antrum in every case in which, the acute stage having passed over (say in three weeks), the discharge continues. In the absence of an exploration, the case must be kept under observation for a long time.

- J. E. Sheppard (26, Mar.): In acute middle ear suppuration the streptococcus and pneumo-diplococcus are present, while in chronic otitis media the staphylococcus is the principle germ found.
- R. H. Woods of Dublin (2, April) believes that suppurative inflammation of the middle ear in *measles* and *scarlatina* is due to the lowered vitality of the tissues and their inability to resist the influence of micro-organisms, which might have remained quiescent in the tympanic cavity had the health of the patient continued good. He calls attention to the fact that in any ill-nourished or cachetic condition, the tendency to purulent otitis is greatly augmented.

In acute otitis media W. Cheatham (68, Oct. 1, '98) finds that the pneumo-bacillus of Friedlaender plays an important part. The principal characteristics of the bacillus of Friedlaender are as follows:

1. Nonmotility. 2. Polymorphism. 3. Decoloration

when stained by Gram's method. 4. The presence of a well-developed capsule, especially when taken from the heart blood of the inoculated mice after death.

The cultural characters are as follows:

- 1. Whitish semi-translucent, sticky growth in bouillon.
- 2. Ærobic and anærobic growth in gelatin, causing no liquefaction.
- 3. Whitish, moist, raised growth on slanted gelatin, the growth slipping to the bottom of the tube after four or five days.
- 4. Abundant gas productions in glucose-gelatin stroke cultivation.
- 5. Slimy and almost transparent growth on agar and blood serum.
 - 6. Formation of acid in dilute lactose bouillon.
- 7. Coagulation of milk when an acid reaction (in four cases before the ninth day, in one case on the eleventh day).
 - 8. Brownish abundant growth on potato.
- Lermoyez (2, Dec.) takes the position that acute suppuration is contagious and that isolation would in many cases prevent it.

He reports seven cases which he thinks point strongly to this conclusion:

- I. The first case, a very simple one, was that of a woman who waited upon her husband while he was suffering from a slight catarrhal median otitis, and who, without any local previous disposition, and without being exposed to a cold, as she did not leave the room, was attacked with a similar affection. These two cases were similar, and went through the same course.
- 2. A second interesting observation is that of two sisters who lived together. They were both attacked, with different degrees of intensity, it is true, by herpetic angina, true herpes

of the pharynx. In both there resulted acute purulent otitis, having the same character in each, with torpidity almost without pain, but with enormous distension of the tympanum, which did not undergo spontaneous perforation and yet gave rise to an abundant suppuration.

- 3. Another observation was that of a coincidence which was, at the least, a curious one. Two sisters living together were attacked with measles. They had intense purulent otitis, and both, in the course of their disease, had identical attacks of adenoiditis. Measles, otitis and adenoiditis followed each other in the same chronological order; why allow a contagion in the first disease and not in the others?
- 4. Two children, sisters, were attacked by a mild influenza, and in both there was an acute otitis, following the same course in each, slight and short, of the congestive type, with tympanic ecchymoses.
- 5. Another case of the same kind, but more clearly cut. In a brother and sister, without any rubeolous or influenzal infection to prepare the way, there broke out an acute otitis of the hemorrhagic form, commencing with an effusion of blood into the tympanic cavity and a tympanic bulla containing blood. This was followed by secondary suppuration, and settled down without fever or pain. It is true that both these children irrigated their noses by means of a Weber's siphon douche, but this imprudence could hardly, in my opinion, be held responsible, because the otitides had none of the characters of the ordinary suppuration of the tympanum, which follows nasal irrigation.
- 6. This is a curious observation. In the course of a slight influenza, an old lady became suddenly affected with double hemorrhagic median otitis of the apoplectiform type, with involvement of the external ear. In the next place, the chambermaid who attended her had, two days afterward, first a slight influenza, then a sudden hemorrhagic otitis, similar in every respect to that of her mistress.

7. An observation similar to the preceding one. A chambermaid, without previous influenza or cold, was suddenly attacked with acute hemorrhagic otitis, with hemorrhagic bullæ on the tympanic membrane and the walls of the meatus. Four days later her young employer, on whom she attended, was also suddenly seized with a similar illness of the same type and following the same course.

These observations might evidently be interpreted as pure coincidences. Nevertheless, this coincidence has come before me during two years under conditions so precise that I have no hesitation with regard to it.

I would add further, that this coincidence is of sufficient frequency to call for observation.

The otitic attacks that I observed simultaneously in husband and wife, in brother and sister, in employer and servant, were exactly of the same type. Therefore, when a healthy individual, put in contact with a patient, contracts from this contact a disease of identical character, and this is confirmed by its repetition in a third of the cases observed, we are justified in suspecting that there is contagion, rather than accepting an easy faith in mere coincidence.

What my observations tend to prove is particularly this: Given the first patient affected with influenza, complicated with otitis, any other influenzal patient, put in contact with him, will run a great risk of acquiring this otitic complication.

Lermoyez believes that broncho-pneumonia and otitis have the same pathogenesis.

He says further: At the hospital we have considerably diminished the number of broncho-pneumonias, and in doing this have greatly reduced the gravity of the eruptive fevers by separating the simple cases from those with lung complications. We must do the same with regard to otitis. For acute otitis is in no way less serious than broncho-pneumonia.

To prevent is better than to cure. It is simpler to pre-

vent the occurrence of an otitis than to treat it afterward. In order to realize this idea of prophylaxis, nasal and buccal antiseptics are excellent, and the results are encouraging; but there is something better to do. Acute otitis is contagious. Let us isolate the otitic cases!

NON-SUPPURATING DISEASES OF THE MIDDLE EAR.

In an article on the "Classification and Prognosis of Cases of Long-standing Deafness," L. E. White (4, Apr., abst. I, June) says: As there are numerous exceptions to the general statement that the prognosis is favorable in an inverse ratio to the duration and degree of deafness, the author has classified the chronic cases so as to show those in which an improvement may reasonably be predicted, as follows: I. Chronic suppurative and the effect of chronic suppuration. 2. Chronic catarrhal. 3. Chronic secretory catarrhal. 4. Adhesive catarrhal. 5. Insidious. 6. Labyrinthine. Chronic cases are those over five years' duration.

In the chronic catarrhal the trouble starts in the nose or naso-pharynx, or both. In the secretory catarrhal cases there is, or has been, a closure of the Eustachian tube, and the result is an accumulation of fluid in the middle ear and sudden deafness. The adhesive is but a later stage of one or the other of the preceding classes. In the insidious cases there is usually no catarrhal trouble, the Eustachian tube is free.

In distinguishing between the adhesive, insidious and labyrinthine the hearing tests are all-important for prognosis. Of these the voice is the most valuable, and the whisper, uttered after expiration, is that part of the voice on which most reliance can be placed.

The author has devised an ingenious and useful hearing chart, and demonstrates its use and his classification by illustrative cases.

La Force (7, Feb. 25) calls attention to the influence of diathesis and sanitary surroundings in chronic hypertrophic otitis media. He emphasizes the importance of early treatment. When there are secretions in the Eustachian tube or middle ear, he advocates their removal by Bishop's method of auto-aspiration. This is followed by inflation of the middle ear by either Valsalva's or Politzer's method.

Liebig (13, No. 20) calls attention to the improvement noticed in cases of deafness among workmen in chambers where the air pressure is increased. The increased air pressure empties the chronically engorged blood vessels, whether they be of the tympanum or labyrinth. Tinnitus, when due to hyperemia, has been relieved. It is suggested that this method be used in the differential diagnosis of hyperemia and anemia of the labyrinth. A chamber for treatment of the ears by compressed air has been constructed at Reichenhall, Bavaria. The extremely broad claim is made that nine out of ten adults and four out of five children, with chronic deafness, can be cured by the compressed air method.

In sclerosis of the middle ear with nerve involvement, Dundas Grant (2, April) says that much can be done for the patient by internal medication. The condition may be one of anemia, or of hyperemia, or may alternate from one to the other. When the diagnosis is in doubt nitrite of amyl inhalations may be given sufficient to produce a slight rush of blood to the head. If the condition is one of anemia, hearing for both the voice and the fork will be temporarily improved. Nitroglycerine has a similar effect.

The treatment suggested is the administration of iron and nux vomica, sanitary improvement and regulation of the bowels. Camphor is given for the instability of the vasomotor system.

Bishop (153, Jan.) refers to the article by Robin and Mendel, which appeared last year in *La Medicine Moderne*, and suggests that cimicifuga may act by restoring the normal

tension to the ossicular chain. A number of cases are cited in which cimicifuga gave marked relief in tinnitus, especially that resulting from hypertrophic otitis media. In some cases the hearing was improved. The dose given was from twenty to thirty drops daily, in divided doses if headache was produced.

Hovel (9, Oct. 15) advocates the adoption of a uniform standard of measurement for the gauge of Eustachian catheters and suggests:

- 1. That the gauge of Eustachian catheters shall be that of the French catheter gauge, which is well known and is graduated on a definite scale.
- 2. That the length of the curve shall be expressed in millimeters, the number indicating the distance which the curve separates two parallel straight lines.

Randall (27, Dec., '98) writes on the technique and value of catheter inflation of the tympanum (1, Jan.). Otologists must not abandon the catheter because it cannot undo damage long irremediable, but should use it with skill and confidence in the large group of cases where no operation, "patent eardrum" or phono-massage can avail as much.

Attention to the nose and pharynx must precede its use. If the beak of a well-made catheter is passed along the nasal floor until it is felt to sink over the edge of the hard palate, it will rarely fail to reach the mouth of the Eustachian tube, if rotated outwardly, through a third of a circle. The back edge of the nasal septum is also a good landmark. Virgin silver is the best material for the instrument, as it can be easily bent and sterilized in the flame.

In chronic cases injections through the catheter may be attempted. Weak solutions of silver, followed by iodin vapor, are useful. Pneumatic massage by the Siegle instrument is serviceable. From four to six weeks treatment is necessary. Then an intermission is best, and another course of treatment for a few weeks will be more effective.

In discussing the technique of tympanic inflations Pinchon of Chicago (1, Nov., '98) states that the object of tympanic inflations is to accomplish one or more of the following objects:

- 1. To secure ventilation of the tympanum.
- 2. To remove abnormal secretions or discharges.
- 3. To restore the normal air pressure in the tympanum.
- 4. To correct the engorgement of vessels due to rarefaction.
 - 5. To promote the absorption of inflammatory products.
 - 6. To push out the abnormally retracted drumhead.
 - 7. To cause massage of the ossicles.

Politzerization is the preferable method of inflation under the following circumstances:

- I. In noninflammatory conditions when the tube is sufficiently patulous.
 - 2. In the treatment of children.
- 3. When nasal deformities render the use of the catheter difficult.

Catheterization is the better method of inflation:

- 1. When Politzerization is not successfully accomplished.
- 2. For purposes of diagnosis.
- 3. When it is important that only one ear should be inflated.
 - 4. When using the continuous air-current.

The continuous air-current is recommended:

- 1. When tubal catarrh is pronounced.
- 2. When Politzerization produces discomfort.
- 3. In acute inflammatory conditions.

The intermitting air-current is of value as a means of causing passive motion whenever there is a diminished os-

sicular motility and should be as strong and as rapid as can be comfortably borne by the patient.

R. Newman (17, Dec. 17, '98) advocates the use of electricity in deafness, and in strictures of the Eustachian tube. Copper bougies, varying from Nos. 3 to 6 (French scale) are mounted on No. 5 piano-wire, and passed through insulated catheters into the Eustachian tube. The bougies are connected with the negative pole of a battery, and the circuit is completed by the patient holding the positive pole. Two to five milliamperes are applied.

In cases of impairment of hearing, due to occlusion of the Eustachian tube, Newman has demonstrated that electrolysis is very useful.

Vibratory Massage.—Concerning this method of treatment, Ostmann of Marburg (2, Dec.) says:

Long-continued closure of the Eustachian tube and inflammatory affections of the middle ear frequently give rise to changes in the sound-conducting apparatus, removal of which can by no means always be attained by our present methods of treatment. Any method, therefore, which seems to promise an advance in the treatment of these hitherto incurable cases of deafness deserves careful and scientific investigation. Vibratory massage appeared to me to constitute such a method. By some specialists it has been repudiated off hand, by others warmly praised, but by none has it yet been scientifically tested.

With the purpose of "scientifically testing" the method Ostmann experimented on normal ears with the different vibratory apparatuses. The instrument finally selected was Hirschman's electric massage apparatus. It was set for a two millimeter piston stroke, and driven at the rate of 1,000 to 1,200 strokes per minute. The treatment was continued for ten minutes daily and all changes noted. Four cases of long standing, intractable deafness from middle ear catarrh

were selected for the experimental test. The results, according to the different hearing tests, is fully reported.

The general result was as follows:

In no case was there any perceptible objective change. The subjective—sometimes very intense—noises in the ear were never increased by the massage, but rather underwent diminution after a time, though in no case did they entirely cease. Just as before, so also during and after the massage, great variations in the intensity of the tinnitus were observed, though as a rule it never regained its original intensity. The lower limit of hearing was increased downward in some of the cases very considerably, whilst there was also a noteworthy prolongation of the duration of hearing for all the octaves of the C fork.

It is impossible to say beforehand whether a given case will profit by vibratory massage. The treatment must be applied for at least a fortnight before a definite opinion can be formed.

The author submits the following conclusions: Vibratory massage is *indicated*.

- I. In chronic deafness resulting from chronic hypertrophic middle-ear catarrh. Here it is to be observed that all pathological changes in throat, nose or tubes must be removed as far as possible before commencing the massage, and the latter must not be carried out during any acute relapse of the ear condition.
- 2. In chronic deafness, left by acute catarrh or inflammation of middle ear, and which resists all ordinary methods of treatment.

Vibratory massage is contraindicated:

- 1. In all acute inflammatory conditions of the sound-conducting apparatus.
- 2. In all diseases of the sound-perceiving apparatus, with normal sound-conduction. But should middle-ear disease, causing rigidity of ossicles, exist at the same time, one

should surely try whether massage would not improve the condition.

3. From its mode of operation vibratory massage is probably of but little use in middle-ear diseases which lead to considerable displacement—retraction of the ossicles, simple chronic middle-ear catarrh—or to extensive atrophy of the membrane or adhesions of the same. Further observations, however, are required to prove how far massage is useful or harmful in all such cases.

In the discussion which followed, Dr. Cohn (New York) said he had used the massage apparatus for three years. At first he was hopeful that it was going to help him in improving the hearing. When he had used it several months he became less hopeful, but he hoped that it might assist him in tinnitus. But after three years' conscientious use, he could not say that he had been helped at all. He was speaking of the electrical vibratory massage. He found that the noise stopped for a few minutes, but returned in ten minutes or so. He thought he had received better results with the Delstanche apparatus. It was true, he had not used it, like Professor Ostmann, for twenty-five minutes. But, on the whole, he did not see any benefit from electrical vibratory massage.

Dr. Goldstein expressed himself in favor of massage, whether by the original method of Delstanche or by one of the various forms of mechanical devices. He did not agree with Professor Ostmann on the length of time. In a previous paper Goldstein had touched on the injection of oily preparations into the tympanic cavity just prior to the massage. He believed that the presence of these oily medications in the tympanum softened the adhesions, and in that way brought about more effective results.

Geo. A. Webster of Boston (1, April) reports six cases of impaired hearing, with tinnitus, following chronic suppurative otitis media, treated by pneumatic massage alone. In each of the cases there were either large perforations or the

membrane was entirely absent. One case was not improved. In the others the tinnitus was either greatly lessened or relieved entirely. In all there was marked improvement in hearing. The average number of treatments was twelve, and the average time the cases were under treatment was forty-nine days.

Both the electric and hand massage were used. No advantage was noted in the former, except convenience to the operator.

Dundas Grant has used mechanical vibration applied to the spine in ten hopeless cases of sclerosis.

In three cases the hearing was greatly improved and in three the improvement was moderate. The vibrations were applied to the spine by means of an electric motor placed between the shoulders. To the axle of the motor was attached an eccentric disk to produce the vibrations. It is Grant's opinion that the effect is due to massage of the stapedio-vestibular articulation. Considering the hopelessness of such cases, any plan of treatment which promises improvement in even a limited number of cases is worthy of further investigation.

The remarkable sense of well-being which patients experience after its use would suggest that it may also have some effect as a nerve tonic. In any event, the enormous improvement produced in three, and the more moderate improvement in other three of the ten cases described, must commend the treatment to all those who have been baffled by such cases; in fact, to all aurists of any considerable experience.

Lofton (149, Oct. 20) describes the use of the ordinary stethoscope for massage of the drum membranes and inflation of the middle ear. A hard rubber mouthpiece is substituted for the chest receiver. The patient holds the mouthpiece between his lips and makes rapidly repeated suction so that the drum membranes are caused to vibrate. The effect

may be limited to one ear by compressing the tube leading to the other.

While Lofton claims brilliant results for this plan of treatment and refers to cases cured by its application, the use of the stethoscope in this way, and, in fact, the value of auto-massage in any manner, is decidedly questionable.

Meniere's Syndrome,—Heber N. Hoople (1, Dec.) reports in detail a case which he calls "Meniere's Syndrome." The distinctive features of this case are: 1. No loss of consciousness, no convulsions; no other signs of epilepsy to leave room for doubt as to the proper exclusion of that disease. 2. Vertigo, occasionally epileptiform. 3. Absence in the first attacks of marked tinnitus; its presence as a marked feature subsequently. 4. Unusual absence of tympanic marks of chronic catarrhal otitis media. 5. Prominence of the neurotic hyperexcitability of temperament. 6. Presence of vertiginous aura. 7. Association of deafness for both low and high tones with improvement in both; subsequent loss of former without loss of latter.

The patient, a man of forty-six years, had sudden attacks of dizziness, tinnitus and vomiting, would fall down but did not loose consciousness. There was marked impairment of hearing, which was improved temporarily by middle ear inflation.

As compared with true Meniere's disease Hoople believes that it is a case of chronic nonsuppurative otitis media attended with involvement of the labyrinth, or in other words, a case of mixed disease with vertigo exaggerated to an unusual degree.

A case of middle ear disease simulating Meniere's disease is reported by Wm. L. Ballenger (7, Aug. 12). The case is that of a man, forty-one years old, who has the usual symptoms of Meniere's disease, except that the attacks are temporary, and recurring. They usually last from two weeks to a few months. Inflation of the middle ear improves the

hearing and relieves the pain in the head, the nausea and the dizziness.

Examination of the ears shows retraction of the drum membranes, especially of the left. Bone conduction absent in left ear. Inflation brings bone conduction almost up to normal.

Ballenger concludes that the symptoms are caused by the extreme retraction of the drum membrane, driving the footplate of the stapes into the oval window, thereby increasing the intralabyrinthine pressure.

C. H. Burnett (156, Vol. vii, No. 1) advocates removal of the incus in the progressive hardness of hearing from chronic catarrhal otitis media. This operation, though more difficult than removal of the membrane and ossicular chain, is attended with far less inflammatory reaction. During the past eight years Burnett has performed the operation sixty-one times. The results indicate that the progressive impairment has been stopped, not only in the ear operated, but in the other as well. In some cases marked improvement of hearing was noted.

Burnett argues for the early operation before the internal ear has become involved, for if any good is to be accomplished by operation it should be done while there is hearing left, since when once it is lost the function cannot be restored.

Alderton (2,July), at the meeting of the American Otological Society, reported trephining the stapedial footplate in a case of sclerosis. The incus had been removed without change in the hearing. Six months afterward an attempt was made to remove the stapes, but the crura broke, leaving the footplate in the fenestra ovalis. After the attempt at removal of the stapes the hearing for the whisper was increased from four and one-half to eighteen feet. During the next few days the improvement was gradually lost until the hearing reached the original distance. Alderton concludes that the

footplate was temporarily mobilized, but that fixation recurred and with it the deafness returned.

A few months afterward the footplate was drilled through with a guarded trephine. Labyrinthine fluid escaped and the patient complained of bubbling noises in the ear, autophony and other unusual sensations. No report is made of the hearing immediately after the trephining, but within a month the fenestra ovalis was hidden by cicatricial tissue in the opening of the drum membrane, and the hearing, the tinnitus, and everything else was the same as before the operation.

Alderton counsels against both trephining and removal of the footplate in sclerosis. In the discussion of the paper Blake reported a case in which a free flow of labyrinthine fluid followed removal of the stapes, and while the flow continued the hearing remained good, but with the cessation of the fluid the hearing returned to nil.

Crocket (2, July) mentions two cases in which total deafness followed cutting the stapedius muscle. He believes labyrinthine hemorrhage occurred when the intralabyrinthine pressure was suddenly relieved.

B. Floderus (148, June 30) has devised an operation for ankylosis of the stapes which is described (7, Aug. 12) as follows:

By an operation devised after much study and experimenting on cadavers, but without experience on man, Floderus proposes to replace a portion of the external wall which interferes with the transmission of sound into the laybrinth, by an elastic vibrating membrane which can transmit the sound perfectly into the internal ear. It promises fine acoustic functional results, freedom from relapses and comparatively little danger of infecting the middle ear, while it is practicable even in cases of extensive hyperostosis. It is especially adapted to cases of bony ankylosis of the vestibular articulation of the stapes, and although delicate and long, is evidently superior in many respects to the unsatisfactory op-

erations on the stapes now in vogue. The middle ear is opened according to Stacke; the membrana tympani, the lateral wall of the attic, the malleus and the incus are extirpated; the labyrinth is trephined at the front edge of the fenestra ovalis, and the thin plate of bone is resected from a point 2 to 2.5 mm. from the anterior edge of the fenestra ovalis almost to the rear edge of the stapes plate, the resected surface measuring 2 mm. at the back and 1 mm. forward. The defect is covered with a Thiersch flap taken from the dorsal side of a finger over the middle phalanx, which forms the vibrating membrane.

Malherbe of Paris, (2, Dec.) describes a new operative procedure for the relief of chronic nonsuppurative otitis media, in a paper entitled, The Surgical Treatment of Dry Chronic Middle Ear Otitis by Scooping-out (Evidement) the Petro-Mastoid Bones with and without Intubation. After discussing the anatomy, physiology and pathology of the structures involved in dry catarrh and sclerosis, he says: It occurred to me that in order to re-establish the balance of intratympanic pressure, which is often destroyed, and to enlarge the air spaces, I might, after clearing out the bone, provide a communication between these tympano-mastoid cavities and the external air, thus forming a veritable tubage or canalization of the middle ear.

I obtain this object by means of a small U-shaped celluloid tube of about the size of a No. 15 French (No. 9 English) catheter.

This U-shaped tube is first asepticized by formyl vapor, and then one end is placed in the antral cavity, whilst, owing to its shape, the concavity of the tube rests on the anterior border of the mastoid process. The other end, which has its convex side beveled, enters the external auditory canal through an opening made in its posterior wall at the junction of the cartilaginous portion and the bone.

Then the author describes in detail the steps of the operation and sums up the subject in the following conclusions:

- 1. The operation which I have proposed and described under the name of scooping-out of the petro-mastoid is by preference the surgical treatment for dry chronic osteitis of the middle ear. This procedure, based as it is on the physiological, structural, and developmental characters of the tympano-mastoid system, is authorized by the nature of the anatomical alterations which mark all varieties of this disease.
- 2. This mode of operating is the only one which allows free access to the structures in the cavity of the tympanum, and to the pneumatic appendices of the middle ear.
- 3. Benefit will follow from the operation if the labyrinth is not yet affected, because the operative results are entirely governed by the state of the lesions of this part.
- 4. An attentive and methodical examination of the various parts of the auditory apparatus and of their functions is indispensable.
- 5. The aerial perception of the deep-toned fork should not be reduced too low if we hope to have an entirely satisfactory result.
- 6. The duration of the osseous conduction of the sound of the deep-toned fork ought to be as long as possible, and nearly equal to the duration of the atmospheric perception of the same sound by a healthy ear.
- 7. The diminution and, above all, the abolition of atmospheric perception of the sounds of the high-toned fork are extremely grave and unfavorable signs.
- 8. Both ears should not be operated on at the same time; unless there be some contraindication, the surgeon should commence with the deafer ear and that most troubled by subjective noises.
 - 9. The different stages of the operation are:
- a. The retro-auricular incision, displacement of the auricle and meatus, and peeling off the periosteum. b. Checking the hemorrhage and making the opening in posterior wall of the meatus. c. Clearing out the bone with a gouge and

- mallet. d. Enlargement of the aditus and opening freely into the tympanum. e. Restoring movement to the ossicles and freeing the tympanic cavity from bands and adhesions. f. Placing the U-tube and gauze *in situ*. g. Complete closure of the wound, and suturing the auricle in position. h. Applying the dressing.
- 10. On the eighth day the sutures are removed, and on the tenth all is terminated.
- 11. The resulting improvement in hearing will be most marked for sounds of a high tone.
- 12. Subjective sounds, due to a lesion of the transmitting apparatus, and to an augmentation of intra-tympanic pressure, disappear or diminish progressively after the operation.
- 13. As the U-tube establishes a permanent communication between the tympano-mastoid cavities and the external ear, intra-auricular pressure is regulated, and, for the same reason, sonorous vibrations are also augmented.
- 14. Scooping-out the petro-mastoid with the employment of the tube is indicated in all cases where there is a diminution and narrowing of the spaces of the middle ear, such as occurs in sclerosing lesions and condensing osteitis, It completely provides for the pneumatic functions of the ear.
- 15. Simple scooping-out of the petro-mastoid is to be preferred in all hyperplastic forms of otitis without chronic lesions of the bone.
- 16. The aseptic celluloid U-tube when used gives no trouble.
- 17. The benefit secured by the operation continues permanent.
- C. H. Burnett (123, April), says that *vertigo* may be due to disease of the external, middle or internal ear, but that wherever the source of the irritation, it is conveyed through the ampullæ of the semi-circular canals to the motor filaments of the auditory nerve, the peduncles and the cerebellum.

Such irritation may be excited by undue retraction of the

membrane with impaction of the footplate of the stapes in the oval window, and consequent compression of the intra-laby-rinthine fluid and the ampullæ. Paroxysmal attacks of ear vertigo can be explained by assuming that sudden impaction occurs or that an increase in the pressure may come from the cranial side with a lessening of the compensatory yielding in the fenestra. In twenty-seven cases of ear vertigo freedom from incapacitating attacks have followed removal of the incus and liberation of the stapes.

Tinnitus and Noises in the Ears.—Bouchard (11, Sept. 17, '98), abstract (1, Apr.). Tinnitus of high pitch is observed in active or passive hyperemia of the auditory organ when the labyrinth is also involved. Tinnitus of low pitch in the majority of cases is of nervous origin, especially in cerebral tumors, affections limited to the labyrinth, and affections of the middle ear with participation of the nervous apparatus. Entotic sounds are observed when the condition of the resonance of the ear is especially favorable (obstruction of the canal, secretions in the tympanum) and when there is hyperemia of the acoustic nerve.

Melodious sounds are a rare phenomena and are due to the excitation of the encephalum. Noises in the ear may be of a reflex character as in neuralgia of the trigeminus, dental neuralgia, glaucoma, migraine, affections of the uterus, stomach, kidneys, liver, and are also the tinnitus of neurasthenia and hysteria. Noises may exist which are compatible with the integrity of the auditory apparatus, such as muscular sounds, sounds due to the rubbing of the temporo-maxillary articulation, etc.

The author recommends the use of quinine, which at first increased and afterwards diminished the tinnitus, not only in the dry and sclerotic form, but also in Meniere's disease.

V. Ucherman, of Christiania (2, Nov.). says that *rheumatic diseases of the ear* are rare and seem to be little under-

- stood. The symptoms are, apparently, not sufficiently distinct, nor the etiology so clear as to establish a safe conclusion in regard to cause and affect. Still it is his opinion that a closer investigation of the matter will enable us to recognize certain common features symptomatic and pathological by which a clinical diagnosis of the special cases can be made or rectified. After discussing the literature of the subject and reporting two cases he sums up his conclusions thus:
- I. Rheumatic fever is sometimes preceded, sometimes accompanied, by otalgia, alone or together with an acute swelling and injection of the drum and the adjacent bony meatus, followed by a serous or sero-fibrinous secretion of the middle ear (otalgia, myringitis, otitis externa, otitis media rheumatica), or it may be complicated during its progress with affections of the middle ear and internal ear (labyrinth, perhaps the auditory nerve).
- 2. There are other more independent rheumatic ear diseases with persons of a rheumatic constitution or tendency (previous rheumatic fever, etc.). The ear affections appear as an otitis media serosa with yellowish, half-fibrinous exudate, or as a (secondary) sclerosis with progressive character.
- 3. The characteristics of the different forms are: In the acute forms—painfulness, excessive injection, and the tendency to the formation of fibrinous exudates. In the chronic forms—the tendency to affect the bony capsule, with severe tinnitis and slow, but steady progression. Salicylic acid seems to influence the acute forms, but not the chronic. These latter, judging from the experience of a case at present under my treatment, are perhaps more influenced by a general rheumatic treatment.

CHRONIC SUPPURATIVE OTITIS MEDIA.

E. E. Clark (109, Sept.) condemns the physician who minimizes the importance of middle ear suppurations. He

believes that prevention is better and more satisfactory than curative measures.

Clark says: Many a child has, through early neglect, contracted a chronic suppurating ear that later sent it to an untimely grave because of the extension to contiguous structures. While the laity, and unfortunately certain members of the profession, who are not well informed upon the consequences of the disease, minimize its importance and advise that it be let alone, and that children will outgrow it, the patient's life may pay the penalty of its neglect. The disease may outgrow the patient. The close relations of the tympanic and cranial cavities should suggest to the mind of every thoughtful physician the importance of prompt and skillful interference with the progressive destructive ravages of the suppurative process. It is not self-limited, it does not tend toward resolution, and no trifling makeshift is pardonable.

Toeplitz (17, Dec. 31, '98) reviews the diagnosis and treatment of the various forms and conditions arising from suppuration of the middle ear. The appropriate treatment varies from mild irrigations to Stacke's operation, with all its modifications. With appropriate treatment under favorable conditions Toeplitz takes a very hopeful view of the prognosis in aural suppurations.

Teichman of Berlin (128, Vol. xxviii, No. 2) makes a "Contribution to the statistics of the dangerous complications of suppurative ear diseases and of operation on the mastoid" (3, Aug.). Of 1,750 cases, more than half (56.6 per cent) belong to the periods 6 to 30 years, while 71.8 per cent belong to the years 0 to 30. According to the returns three-quarters of the dangerous complications follow chronic purulent otitis and only one-quarter the acute. The suppuration in influenza-otitis almost always runs an acute course up to the inception of the dangerous complication, while in the otitis of scrofula, tuberculosis, diphtheria and measles it runs a chronic course.

L. J. Lautenbach (7, March 4) believes that in "Suppurative diseases of the ear, the presence of polypi and granulations is not an unfavorable indication" (3, Aug.). It is not intended to infer that in every case of polypoid complication the results are better than in those where neoplasms do not exist. Yet the average amount of benefit derived in the latter class of cases is much greater than in the former.

Granulations form an evidence of the activity of the inflammatory process in a benign manner and exhibit an effort of nature to extend her healing processes to as great a measure as possible. They allow the retention of necessary vascularity, the nerve innervation remaining, until such time as through artificial or natural means everything is ready for a quick healing, and all we need is to take advantage of nature's open door.

Jackson (7, Jan. 28) utilizes the digestive properties of carica papaya in the treatment of tympanic suppurations. After the ear has been cleansed and disinfected in the usual manner the tympanum is filled with a solution of carica papaya. Jackson finds this remedy superior to all others of its class.

Talbott R. Chambers (7, Nov. 4) reports excellent results from the use of *enzymol* in the treatment of both acute and chronic suppurative otitis media. The enzymol is diluted one-half with water and dropped into the ear three times a day. Cotton rolled into a pencil shape may be saturated with the solution, and pushed into the ear. It seems especially useful in the destruction of polypi and granulations. The report of one of the cases is given in full:

M. C., aged seven, with subacute suppurative otitis media, after one month's daily treatment by the cleansing with water and peroxid and applications of argenti nitras, etc., was somewhat improved. A large polyp which I had cauterized with chromic acid proved refractory. Two days after employing the enzyme, the ear came to a state of rest.

Discharge ceased and the polyp disappeared. The same patient had chronic otitis media suppurativa of left ear of four years' standing. This ear had a polyp occluding the auditory canal. After two or three days' treatment with the cotton pencil soaked in enzymol the polyp had disappeared and the discharge was greatly diminished. In this ear the treatment was continued for six weeks. If omitted for three days, a little mucoid discharge was found on cotton introduced. Finally, all discharge ceased. This patient was deaf in both ears and unable to attend school. She now has nearly normal hearing for the watch in each ear and goes to school.

Lucæ, of Berlin (2, Oct.), believes that formalin irrigation is the best conservative treatment for chronic suppurative otitis media. He uses the formalin in the strength of I to I,000. No unpleasant results have been noticed, except that in some cases it has run through the Eustachian tube and produced smarting of the pharynx. In cases which were not cured by several irrigations daily for five or six weeks, when subsequently operated on, extensive necrosis, empyema or cholesteatoma was found.

Halasz (15, No. 42, '98) calls attention to the value of peroxide of hydrogen in softening inspissated pus and collections of epithelium.

Hugh Blake Williams (104, Jan.) is convinced that the element of chronicity in chronic suppurative inflammation of the middle ear is largely due to lack of thoroughness in treatment. The method of procedure mapped out will not succeed in cases where necrosis has occurred, but in all others, Williams believes, it will reduce the duration of treatment from months and weeks to days (1, June).

The patient is placed upon the side with the affected ear up. The concha is filled with Marchand's hydrozone, which is allowed to remain until it becomes heated by contact with the skin, when, by tilting the auricle, the fluid is poured gently into the external canal. The froth resulting from the effervescence is removed with absorbent cotton from time to time and more hydrozone added. This is kept up until all bubbling ceases. The patient will hear the noise even after the effervescence ceases to be visible to the eye.

Closing the external canal by gentle pressure upon the tragus forces the fluid well into the middle ear, and in some instances will carry it through the Eustachian tube into the throat. When effervescence has ceased the canal should be dried with absorbent cotton twisted on a probe and a small amount of pulverized boracic acid insufflated.

The time necessary for a thorough cleansing of a suppurating ear will vary from a few minutes to above an hour, but if done with the proper care it does not have to be repeated in many cases. However, the patient should be seen daily and the hydrozone used until the desired result is obtained.

In children and some adults the hydrozone causes pain, which can be obviated by previously instilling a few drops of a warm solution of cocaine hydrochloride. In this article it has been the intention to treat suppuration of the ear rather as a symptom and from the standpoint of the general practitioner.

Jas. W. Dunn (I, Feb.) reports a case of bilateral suppurative otitis media in an anemic boy successfully treated with beef juice applied locally. Dunn argues that the discharge was due to lack of nutrition, and that the beef juice put into the ear supplied the nutriment for promoting a healthy reaction of the part and repairing of the damages, and that it was immediately consumed.

Ard (7, July 22) describes the use of hydrochloric acid applications to the bony walls of the tympanic cavity and meatus (3, Aug.). This remedy was first proposed by Dr. Bull, of Christiania. He believes that the treatment is not indicated if the ossicles are diseased. When dead bone is

visible, he applies cotton soaked in the acid, 4 per cent, and leaves it in contact. In a cavity, he introduces the cotton, removing it next day, these applications being made a week apart. The acid gradually decalcifies the affected bone and acts like curettage. It is a strong antiseptic and cured from one-third to one-half of all cases treated.

M. A. Goldstein (145, Nov.) advocates the dry treatment of chronic suppurative otitis media. He condemns the douche and the syringe on the grounds that the introduction of water into the ear produces a bagginess and infiltration of the membrane which should be avoided. In large perforations there is the additional danger that the fluid may force infectious material into healthy areas of the tympanic cavity. In the use of powders he prefers nosophen because it is non-irritant, inodorous, insoluble, does not cake, and offers a minimum of toxic absorption.

The use of the syringe in chronic suppurative otitis media is condemned by W. F. Strangways (160, Aug.). He believes that the value of peroxide of hydrogen in ear diseases is greatly overestimated. To cleanse the ear, he uses the head mirror and speculum, cotton applicators, forceps, and Anel's lachrymal syringe with a long endpiece. In his estimation cleanliness stands first as a remedy, and compound tincture of benzoin next. He favors the use of tincture of iodine in diseases of the auditory canal.

Andrews of New York (128, Vol. xxviii, No. 1) reports good results from the use of dry hot air in the treatment of chronic suppurative otitis media. His theory is that dry hot air is unfavorable to the development of bacteria. A wooden handle is attached to a powder blower so it can be held by the operator while heat is being applied to the metallic cylinder.

F. H. Millener, of Buffalo (1, Feb.), has used nosophen and antinosin with very satisfactory results in thirty-six cases of chronic suppurative otitis media. They were all cases in which the usual treatment had failed.

Antinosin in two or three per cent solution was instilled into the ear and afterward nosophen powder was dusted into the canal. Dizziness has been noticed to follow the application of antinosin, but this soon subsides and no bad results have followed its use.

Ledderman (1, Feb.) has found nosophen and antinosin useful in aural diseases. He applies nosophen powder after mastoid and nasal operations and finds its antiseptic and desiccating properties very decided.

W. S. Phillips (68, Sept. 2) reports good results from the use of 95 per cent carbolic acid in the treatment of mastoid wounds, and in chronic suppuration of the middle ear. In the mastoid wounds and in the sinuses left after mastoid operations, the acid was applied by means of cotton on a probe. Phillips has made a spray apparatus with a finely drawn tube for spraying the acid into the middle ear and attic. In nearly all the cases so treated, including those with necrosis, the suppurative process almost immediately subsided. No ill effects resulting from the use of the acid have been observed.

[Some time will probably elapse before the above treatment will become general.]

An article on Operative Interference on the Drum and Ossicles in Chronic Middle Ear Suppuration, by Cheatle, of London (118, Oct., '98), has been frequently referred to and extensively quoted. After giving the views of the leading aural surgeons on the subject Cheatle formulates the following rules, which it is believed represent the best practice of the present day (1, Feb.):

The subject naturally falls under two headings:

- A. Operations undertaken to remove the cause of the discharge.
- B. Operations undertaken to improve the hearing after the discharge has ceased.

It will be taken for granted that all operations are performed under thorough antiseptic precautions.

A. To remove the cause of discharge.

We may first clear the ground by saying that ordinary means of treatment, which include thorough purification and packing, curetting, enlargement of perforations, syringing, dry treatment, etc., must first be given a fair trial, and also that, if there are any signs or symptoms of antral or further extension of the disease, the radical post-aural operation is demanded, the drum and ossicles being then dealt with.

There remains, then, those cases which have resisted thorough ordinary treatment, but in which there are no signs or symptoms of extension. These must be divided into three groups, the division depending on the position of the perforation:

- 1. In Shrapnell's membrane.
- 2. In the posterior-superior quadrant of the drum.
- 3. In some other part of the drum.
- 1. Persistence of the discharge with a perforation in Shrapnell's membrane is the most important, for it indicates some chronic trouble of the attic, which space is in proximity to the middle fossa of the skull, and opens posteriorly into the tympanic antrum. The condition, in fact, is an hourly menace to life.

This persistence of attic disease may be due to a variety of causes, the chief being caries of the head of the malleus, body of the incus, or both; caries of some part of the attic walls, collections of cholesteatoma, inspissated pus, or granulation tissue. Under the circumstances indicated, excision of the remaining part of the drum with the two larger ossicles is demanded. Removal of the outer attic wall or its remains has been proposed to effect free drainage without removing the ossicles, but its use lies rather as an adjunct to the ossiculectomy.

Improvement in hearing to a marked degree is often obtained, and the reason is obvious; for if the ossicular continu-

ity is cut through by caries of the malleus and incus, or hampered by the increase of cholesteatoma, pus or granulation tissue in the attic, the remains of the drum, malleus and incus simply act as obstructions to sound waves, their removal allowing the waves to reach the head of the stapes directly. Chronic headache, tinnitus and vertigo are occasionally relieved.

If after removal of the remains of the drum, carious ossicles and outer wall, followed by thorough local treatment, a cure is not effected, the radical post-aural operation is demanded.

- 2. Perforation in the posterior-superior quadrant with persistent discharge is generally associated with caries of the incus, commencing at the descending articular process. The perforation may extend downward or upward, or in both directions, the head of the stapes being often clearly exposed to view, with pus coming from under the upper edge of the perforation. A cure of these conditions is often produced by removing the malleus and remains of the incus and drum.
- 3. Perforation in some other part of the drum rarely demands removal of the ossicles. Retention of cholesteatoma, inspissated pus, etc., may render it necessary, but simple incision is generally all that is needed. Caries of the tip of the handle of the malleus is a fairly frequent condition, but is, as a rule, amenable to ordinary treatment.

Total loss of the membrane, with entire necrosis of the malleus and incus, is sometimes seen as a result of a virulent infection, as in scarlet fever. The ossicles may syringe out under these circumstances, or require simple picking out.

Not unfrequently the drum is represented only by some remains of Shrapnell's membrane attached to the short process of the malleus, the handle of which is cleanly dissected out, or with caries of its lower part, the caries often extending up to the short process. Caries of the incus is often present in this condition. Removal of the remains of

the drum, malleus and incus is indicated if ordinary means do not effect a cure.

B. For improvement of hearing after the discharge has ceased.

In considering this part of the subject it is necessary to classify the changes which may be present in the middle ear after the discharge has ceased:

- 1. Solution of ossicular continuity.
- 2. Adhesions.
- 3. Flaccid cicatrices.
- 4. Retained epithelial deposits, etc., behind the drum.

Before considering these in detail we can again clear the ground by saying that operative interference is contraindicated if the bone conduction is not good; in other words, if there is any inplication of the labyrinth; that if only one ear is deaf, nothing need be done unless the patient's occupation or pleasure demands bilateral hearing.

I. Solution of Ossicular Continuity.—In dealing with attic suppuration with a perforation in Shrapnell's membrane, it was pointed out that if the articulation of the head of the incus is rendered functionless by caries, etc., improvement in hearing is often obtained by removal of the remains of the drum, malleus and incus; the same, of course, holds in healed trouble in this region. To make out as far as possible as to whether the drum and ossicles have lost their conducting function—and this test is a valuable one in other conditions than that now under consideration—stroke the drum very gently with a fine probe or camel's-hair brush, etc. If the function is abolished the patient will feel but not hear it, or the noise produced will be very much less than it should The other and most usual place for solution of continuity is at the incus and stapes joints, a condition which does not produce very marked deafness unless there are adhesions about the stapes, oval window, etc. An artificial drum placed on the exposed head will often help in these cases.

2. Adhesions.—These, as might be expected, may be in all sorts of situations; but they may be broadly divided into those binding down or hampering the drum, malleus and incus, and those more deeply situated around the stapes, oval and round windows. Both the superficial and deep varieties may exist together, and it is impossible, as a rule, to detect the deeper unless the inner middle ear wall is brought into view either by disease or by operation. With regard to the superficial, it may be said at once that simple division only produces a temporary improvement, the hearing getting as bad as ever when the incision heals. The best thing to do, if more or less forcible inflation or injection of fluids fails, is to remove the remains of the drum, malleus and incus, and so explore the head of the stapes. If improvement does not occur then, there are deeper adhesions which should be dealt with. Attempted mobilization of the stapes will help in clearing up this point with regard to the deep adhesions.

Those which pass from the head and crura of the stapes to surrounding parts can often be seen and divided with a fine knife close to the ossicle, which can then be moved with a suitable probe. The stapedius muscle can also be divided.

If the stapes remain immobile after division of all get-atable adhesions, the question comes whether removal of the bone, if possible, will improve matters; and if the oval window is occluded, whether it can be further attacked. These appear to be questions which require further investigation. Adhesions occluding the round window should be divided, as improvement undoubtedly has been observed as a result.

3. A flaccid cicatrix alone rarely leads to very great impairment of hearing. Multiple incisions give benefit by the tightening which is produced by the subsequent contraction (Politzer). If deafness is extreme, adhesion in some part will be present and the case may be dealt with as such.

4. Retained matter behind the membrane requires only incision of the drum and removal. If incisions are not sufficient, it becomes a question whether removal of the remains of the drum and malleus should not be performed.

In a paper read at the meeting of the International Otological Congress, Dundas Grant (2, Oct.) shows that while diminished bone conduction is, as a rule, a contraindication to ossiculectomy, that there are exceptions, and reports two cases to prove the exception. They were both post-suppurative cases, with large perforations or absent membranes.

In the first the impairment was sufficient to incapacitate the man for his occupation—that of lecturer. Conservative treatment had not benefited him. Ossiculectomy improved the hearing but slightly. However, the slight improvement enabled the patient to continue his vocation without serious inconvenience.

In post-suppurative cases, Grant finds that ossicles may interfere with the hearing in three ways:

- 1. By being fixed themselves and thereby making the stapes immovable.
- 2. By favoring the accumulation and retention of desquamative and exudative products which impede the movements of the stapes.
- 3. By preventing the application of a cotton-wool drum to the stapes.

Their removal under these circumstances is justifiable and desirable if the hearing for the whispered voice is less than one meter and the bone conduction is good. Even if the bone conduction is diminished to some extent a sufficient improvement may follow the operation to enable the patient to continue his employment.

Radical Operation.—The subject of radical operation in chronic suppurative otitis media and its complications seems to have received more attention from aurists during the past

year than any other branch of ear work. The literature of the subject is abundant. Many of the cases reported are of value in calling attention to some particular phase of the subject while some must be passed over as offering nothing especially new or of unusual interest.

At the Sixth International Otological Congress addresses on *The Indications for Opening the Mastoid in Chronic Suppuration of the Middle Ear* were made by Politzer, of Vienna, Macewen, of Glasgow, Luc, of Paris, and Knapp, of New York.

Politzer (2, Oct.) says: Experience has shown that the free opening of the middle ear spaces is of the most vital importance. That by it the life of the patient is saved and consequences hurtful to the middle ear are prevented.

When the symptoms are well marked surgeons are apt to be in perfect agreement as to the necessity for operation. The chief point to decide is whether in the absence of well marked symptoms to operate as often as some surgeons maintain. Politzer classifies the indications for operation as objective and subjective.

The objective indications are:

- 1. Caries of the walls of the tympanum.
- 2. Granulations and polypi in the neighborhood of the aditus, recurring after removal.
- 3. Fistulæ opening into the mastoid cavities, and frequently leading to cholesteatoma.
 - 4. Cholesteatoma.
 - 5. Hyperostotic stricture of the meatus.
 - 6. Facial paralysis or paresis.

When the objective signs are accompanied by some of the more serious subjective symptoms operation becomes imperative. Symptoms of serious brain complication are not a contraindication but call for immediate operative interference. Pronounced symptoms of meningitis may be due to a serous rather than to a purulent form of the disease, and frequently the symptoms of meningitis disappear after a thorough middle ear operation, even though the cranial cavity has not been opened. Meningeal symptoms therefore do not contraindicate operation unless lumbar puncture shows the cerebro-spinal fluid to be infected.

Experience also teaches that the clinical symptoms do not always correspond to the pathological conditions found during operations on the temporal bone. In some cases only a small amount of pus or granulation tissue is found in the antrum when the symptoms have been alarming. On the other hand grave pathological changes have been found when the symptoms did not lead the operator to expect them. These circumstances render it impossible to lay down strict rules regarding the indications for operation.

On account of the impossibility of knowing the exact pathological changes going on in the temporal bone some surgeons hold that it is not advisable to wait for well-marked symptoms. Other surgeons take a more conservative view of the question. That vigorous, persistent, antiseptic treatment will cure many of the cases of chronic middle ear suppuration is proven by the daily experience of those surgeons who treat such cases by conservative methods. While a strong advocate of the mastoid operation, Politzer does not believe it is justifiable to operate in ordinary suppurative cases until it has been proven that conservative treatment will not effect a cure.

Macewen (2, Oct.) states as a general rule that when a pyogenic lesion exists in the middle ear or in its adnexia, which is either not accessible, or which cannot be effectually eradicated through the external auditory canal, the mastoid cells and antrum ought to be opened.

There are two general types of suppurative middle ear cases in which operation should be considered: I. Those in which the life of the patient is or is believed to be in immedi-

ate danger from brain complication, pyemia, etc. 2. Those in which the principle object is to remove the cause of the suppuration and thus to improve the present condition and relieve the patient from the danger of future complications. The latter class is considered in detail. In those cases which resist conservative measures Macewen regards the operation of opening the mastoid as materially contributing to the well-being, comfort and happiness of the patient.

Luc (2, Oct.) states his position as follows:

- 1. The opening of the mastoid is indicated in the course of chronic otorrhea under three distinct circumstances:
- a. When the object is to give vent to pus in cases of purulent retention. b. For the circumvention of conditions indicating the threatening or the commencing of intracranial infection of the aural origin. c. For the cure of otorrhea after it has been recognized that this has proved intractable to the different methods of local treatment applied through the auditory meatus, including the extraction of ossicles and the curetting of granulations accessible through this passage.
 - 2. The operation is urgent in the first two cases only.
- 3. In all operations for chronic otorrhea the opening in the bone should extend from the attic to the antrum, or from the antrum to the attic, and be followed by curetting and complete disinfection of all the cavities of the middle ear.
- 4. In the case of threatening intracranial complications, the osseous breach ought to extend from the first to the suspected region of the dura mater; this membrane, however, should not be opened until a second operation. If the threatening signs in question are seen to persist, or still more to increase, the delay of armed expectation should be of as short duration as possible.

In speaking of pain in the mastoid, Luc says it indicates retention of pus and not purulent mastoiditis alone, for it is well recognized to-day that all suppurations of the middle ear are accompanied by purulent mastoiditis, and the local signs,

swelling, edema and redness of the skin, indicate not a simple antral suppuration, but imprisonment of pus in its interior.

Passow (11, Dec. 17, '98) advocates the permanent retroauricular opening in the treatment of chronic suppurative otitis media. His idea is to stop the suppuration by the complete epidermization of the entire cavity. To accomplish this he leaves a free opening and stitches the flaps of skin deep into the wound. The free opening facilitates the post-operative treatment and enables the physician to keep the cavity under observation.

E. B. Gleason (7, June 10) reports two cases of Passow's operation for chronic suppurative otitis media. The radical mastoid operation was performed in the usual manner as far as the bone chiseling was concerned. A right-angled slit is then made in the cartilaginous meatus and the quadrilateral flap so formed stitched into the bone cavity to form a skin covering for its ceiling. A large quadrilateral flap is then dissected up from the skin behind the auricle and turned into the bone cavity to form a skin lining for its floor. When the flaps have firmly adhered and the parts have become comparatively dry, skin grafts are placed on the granulating surface between the flaps. Under favorable conditions the whole middle ear, with surprising quickness, becomes a skinlined, non-secreting cavity.

The advantages claimed for Passow's operation are:

- 1. Quickness of healing after operation.
- 2. Freedom from recurrence.
- 3. Free access to the middle ear for cleansing and observation.
 - 4. Free access of air, keeping the parts dry.

The only objection to the operation mentioned is the disfigurement produced by the permanent opening. The opening is not conspicuous, as it contracts during the aftertreatment and becomes slit-like in character, only oval or

round by pulling the auricle forward. The opening can be closed at any time by a simple plastic operation.

Rudolph Panse (154, Vol. ii, No. 4) discusses the etiology of cholesteatoma. He vigorously defends the theory that the epithelial "pearls" come about in a perfectly natural way, as the result of antecedent inflammations, and the extensions of pavement epithelium into the middle ear. In the treatment of cholesteatoma Panse insists upon the importance of operating in such a manner that the diseased cavities may be always under observation. If a careful ocular inspection can be made, the earliest symptom of recurrence can be noted.

S. Oppenheimer (33, Nov., '98) in a paper on *Tuber-culosis of the Middle Ear*, says (3, Feb.): The tubercle bacilli may be conveyed to the ear through the Eustachian tube, by the blood vessels and lymphatic system, and from the external auditory canal through a perforation of the membrana tympani. In practically all cases of tubercular affection of the tympanic cavities, contagion is conveyed to the part by way of the Eustachian tube.

The morbid changes after infection may be either acute or chronic, the latter being more frequent. The symptoms vary with the progress of the disease and the amount of destruction present. The first indication is frequently the sudden appearance of pus in the external auditory canal, without any evidence of the disease being present previously. Examination shows the tubercle bacilli in the pus.

Enlargement of the periauricular glands, due to the tubercular infection, is sometimes the first symptom present. The nodules in the middle ear are about the size of a mustard seed, scattered irregularly over the entire mucous membrane. When touched with a probe they are found to be hard and resistant. The tubercular process may remain latent in the aural cavity for a considerable time without apparently causing serious trouble, but extension of the dis-

ease usually occurs sooner or later, and presages a fatal termination. An early diagnosis is important and offers a chance for the removal of the diseased area in a limited number of cases. General remedies are important.

- W. Milligan, of Manchester (2, Nov.), contributes a valuable paper on the *Diagnosis and Treatment of Tuber-culous Diseases of the Middle Ear*. After dealing at length with the various phases of the subject he summarizes as follows:
- 1. The primary tuberculous disease in and around the middle ear is of fairly frequent occurrence, and that it most usually attacks the children of the poor, especially the poor of our larger cities.
- 2. That a generalized tuberculous infection may arise from a primary focus within or around the middle ear.
- 3. That the prognosis in such cases is not very favorable, at least 40 to 50 per cent of the cases succumbing, even after operative treatment has been undertaken.
- 4. That in many of the cases operative interference is contraindicated, owing to the extent of the existing disease and the asthenic condition of the patients.
- 5. That when operative interference is feasible the main object should be to scrape away all available foci of disease and to provide efficient drainage.
- 6. That the best and most reliable means of establishing the tuberculous nature of the disease is by means of properly conducted inoculation experiments.

Kretchmann (13, Jan. 3) finds three varieties of tuberculosis of the middle ear. The first has been mentioned under affections of the membrane. In the second, the tuberculous process begins within the middle ear. The cavity soon fills with granulations. The perforation which occurs early can be seen filled with granulations. The membrane is destroyed. The ossicles are apt to exfoliate. The bony wall of the cavity becomes eroded. The disease extends to the antrum and mastoid cells. The labyrinth, the internal carotid, the jugular vein, the facial nerve or the cranial cavity may be invaded. These cases usually occur in the course of general tuberculosis before the vitality has been much reduced.

In the third variety the tuberculous process is engrafted upon a chronic suppurative inflammation. The beginning is a small spot of necrosis, usually upon the inner wall of the tympanum. The spot may be mistaken for a fibrinous deposit. The probe will reveal the fact that the spot is of a different character from the surrounding mucous membrane. Denuded bone is generally present, and is almost always found covered with granulations. This form may be primary but is frequently found soon after the beginning of the disease in some other part of the body.

The third variety is less destructive in its tendency than the second. It may remain a long time quite stationary, or may even recover spontaneously.

In the treatment of tuberculosis of the middle ear Kretchmann begins with iodoform or balsam of Peru, but if not found sufficient the entire diseased portion must be removed. When the disease is confined to a limited area, and readily accessible, the application of caustics through the external auditory canal may be sufficient.

Diagnosis of Mastoid Empyema.—In discussing the diagnosis of mastoid empyema Barrago-Ciarella (abst. 2, Jan.), recognizes the difficulty of making a positive diagnosis in the absence of general and local symptoms. Schwartze expressed the opinion that the diagnosis of empyemia of the mastoid is made only after operation. Cozzolino in 1894 called attention to the speedy reappearance of pus in the tympanic cavity as the "unique symptom" of endomastoid suppuration, and later pointed out that pus from the mastoid always follows a definite course within the tympanum. Pus from the mastoid, in the absence of other symptoms, is distinguished

from that due to suppuration in the attic or caries of the ossicula, not only by its rapid reappearance after the cleansing of the tympanum but by its always flowing in a single line over the inner wall of the cavity from the postero-superior to the postero-inferior segment, passing, when the head is vertical, in front of the fenestra ovalis and fenestra rotunda.

Pus from the attic flows diffusely over the remains of the tympanic membrane on its inner aspect. In caries of the ossicula the amount of pus is so small and reappears so slowly that its source is readily distinguished.

Six cases are reported in which the diagnosis of mastoid empyema was made from "Cozzolino's symptom" alone. Operation showed the reliability of the symptom in each of the six cases.

Louis Bar, of Nice (2, Nov.), contributes an article on the similarity in the symptoms of anterior mastoid abscess and furunculosis of the external auditory meatus. He points out the difficulty of differentiating between the two conditions and sums up the diagnostic features in the following conclusions:

- 1. That early lymphangitis and periauricular adenitis are the rule in all furuncular affections of the meatus, and are late and exceptional in purulent inflammations of the limiting cells. This is consequent on the difference between the lymphatic systems of the external and middle ear.
- 2. That perimastoid edema effaces the retro-auricular depression in furunculosis, whereas in mastoiditis the retro-auricular depression persists, and remains circumscribed.
- 3. That the pharyngeal plexus may become visible through venous stasis induced by mastoiditis.
- 4. That in addition to the different innervation of the tympanum and the meatus, spontaneous pains and sensitiveness are more acute in furunculosis; they are less marked in general anterior abscess of the mastoid.
 - 5. That, also for neurological reasons, in inflammation of

the anterior cells, facial paresis is sometimes observed, as is also an exaggeration of the sense of taste, and a peculiar sensitiveness of the pharynx and end of the tongue.

- 6. That the bacterial nature of the pus is different in the two diseases.
- 7. That, in the absence of any febrile condition, a continuous disproportion between the pulse and the temperature is in favor of mastoiditis.

Diagnosis by Percussion.—Eulenstein of Frankfort (128, Vol. xxviii, No. 2), in 1894 published the results of the examination of ten cases of acute disease of the mastoid in which he arrived at the following conclusions, which he further substantiates by giving the histories of ten more cases.

- 1. By means of percussion (compared with that of the other side) a positive diagnosis of a diseased condition of the mastoid can be made, provided dullness is elicited.
- 2. Dullness on percussion indicates the presence of a diseased area near the surface of the bone, the degree of dullness depending upon the extent of the area involved.
- 3. The absence of dullness is no proof that the bone is not diseased.
- 4. Where other symptoms of mastoid disease are present and there is no dullness on percussion it indicates that the diseased area is either very small or deep-seated.
- 5. By percussion we are enabled to recognize mastoid disease earlier, and that it is a valuable adjunct to the indications for opening the mastoid.

From the tabulated measurement of III skulls, W. Okade (55, Vol. lviii, No. 4) concludes that the anthropological form of the skull offers no trustworthy evidence of the presence or absence of the so-called "dangerous" temporal bone. The source of danger lies in the proximity of the sulcus transversus to the point of operation. The dangerous condition should be anticipated in operating: a. On the right side. b. If the mastoid process is unusually small. c.

If the patient is less than thirteen years old. d. In the case of women greater care is necessary than in men.

Dench, of New York (150, June 15), discusses mastoid complications of the exanthemata of children under two heads: First, prophylactic treatment, and, second, the treatment of the mastoid after it has actually become involved.

In any eruptive fever, when there is a sudden rise of temperature which cannot be explained by the general condition of the patient, the attending physician should always examine the ears. If inflammation is present in the tympanum Dench recommends a free incision from a point just below the tip of the handle of the malleus upward to the tympanic ring. If the temperature is high he also recommends extending the incision outward a considerable distance along the roof of the external auditory canal, dividing the soft parts down to the bone. The object of this incision is not only to liberate any secretions which may be present in the tympanum, but also to relieve the tension and prevent further extension of the inflammatory process.

Cold by means of the ice bag or the Leiter coil is to be used if the mastoid is sensitive to pressure. When cold is used it should not be applied continuously longer than forty-eight hours.

In those cases where mastoid symptoms appear after spontaneous perforation of the drum membrane, Dench says, it is always wise to attempt to secure free drainage through the meatus by means of the incision previously mentioned. Frequent irrigation of the external auditory canal with a lukewarm solution of bichloride of mercury should be employed in all cases where there is a discharge from the tympanum, either as the result of spontaneous rupture of the drum membrane or after surgical interference.

In those cases which are seen at a later period, and where a fluctuating tumor is present behind the ear, operative interference should at once be instituted. Evacuation of the post-auricular abscess by a simple incision through the soft parts is not sufficient; even in very young children the mastoid antrum should be entered in every instance. It not infrequently happens that, after incising the soft parts and evacuating a post-aural abscess of this description, no sinus will be found through the mastoid cortex. The surgeon is often tempted to discontinue the operation at this point. The bony structure of the mastoid should, however, invaria-Although the cortex may be perfectly norbly be entered. mal, we always find in these cases some softened bone, either in the mastoid antrum or in the aditus. Free posterior drainage of the middle ear should always be established. Undoubtedly a certain proportion of these cases recover after a simple incision; in a rather large proportion, however, a radical operation becomes necessary at a later period. must be remembered that in young children the cranial bones are very thin, and that infection of the intracranial structures may occur through the external surface of the cranial bone, as well as through the tympanic roof, or through the posterior wall of the mastoid antrum, as so frequently happens in adults. If the middle ear is thoroughly drained by a posterior opening into the mastoid antrum, subsequent infection of the intracranial structures is impossible.

Dabney (42, Oct. 10) reports a case of mastoid periostitis and inflammation of the mastoid cells. In conclusion he offers the following points regarding mastoid operations in general:

- 1. In all operations scrupulous attention must be paid to surgical cleanliness, as the unexpected may happen and some meningeal exposure be found.
- 2. In periosteal inflammations an incision should be made over the mastoid down to the bone and the bony surface carefully examined.
- 3. When the mastoid antrum is to be opened, the opening should be just behind the external meatus and just below its superior border.

- 4. Chisels and mallet are the best instruments for opening the mastoid, followed by curette, sharp spoon, and rongeur forceps.
- 5. It is best to establish drainage through the mastoid antrum into the tympanum.
- 6. It is of great importance to examine the process in the direction of its tip, and if need be to thoroughly open it.
- 7. The upper part of the wound may be closed with a few stitches; iodoform gauze should be packed into the lower part and well into the bony cavity. The subsequent dressings and irrigation may be determined by the absence of fever and other septic symptoms.
- P. M. Payne (162, Aug.) contributes a paper entitled, "Reports of a case of acute purulent endo-mastoiditis developed in the course of a chronic otorrhea; followed by an extra-dural abscess with a sloughing of the dura mater; metastatic abscess of the lung with spontaneous evacuation of the cavity: Recovery."

Burnett (159, Feb.) reports a case of acute mastoiditis with perforation of the medial plate of the process and consecutive abscess of the neck (3, May). Three ways of propagation of otitic and mastoid suppuration of the neck are recognized, viz., by way of the veins, of the lymphatics, and by direct escape of the pus through a spontaneous opening in the medial plate of the mastoid process, beneath the insertion of the sterno-mastoid muscle, the latter being known as Bezold's mastoiditis.

In a case reported, there was a copious discharge from the right ear. The mastoid region behind the auricle appeared perfectly normal, but behind and in front of the insertion of the sterno-mastoid muscle there was a swelling extending downward about three inches, most prominent however behind the sterno-mastoid muscle and toward the nucha. The appearance of this swelling was coincident with the cessation of the mastoid pain. Firm pressure on this swelling forced pus from the middle ear through the perforated membrana tympani.

An incision two inches long and three deep was made into the abscess and a fluid dram of odorless pus escaped. A grooved director was passed down to the bone, which entered an opening apparently in the base of the mastoid process and passed with little pressure into the cells. Sterilized water syringed into the incision passed directly into the middle ear and out of the external auditory meatus. The case healed without further operation on the mastoid.

The author calls attention to the efficacy of this treatment, and concludes with some excellent advice on the treatment of acute otitis media and consecutive mastoiditis.

J. Dunn, of Richmond, Va. (128, Dec., '98), reports a case of mastoid abscess without any history of discharge from the ear.

Stanculeaunu and Baup (155, Aug. 19) report two cases of fatal septicemia following chronic suppurative otitis media with mastoiditis. Autopsy showed no lesion in the sinus or in any part of the venous system. The liver showed tume-faction of the cells and fatty degeneration of certain lobules. An extremely virulent streptococcus was found in the blood. It is suggested that the microbes may have found their way into the circulation through the walls of the venules and that there was a predisposition to hepatic infection.

Robert Lewis (136, Vol. vii, No. 1) reports a case in which the entire mastoid process was filled with a cholesteatoma. There was an eroded area in the floor of the middle cerebral fossa and another in the wall of the sigmoid fossa. Along the digastric groove was an opening through which the mastoid communicated with an abscess of the neck. The patient was a lady twenty-four years of age and had had suppurative otitis media from infancy.

Randall, of Philadelphia (99, Aug., '98), reports one hundred mastoid operations. His observations are: That naso-

pharyngitis is the starting point in very many of the cases. Treatment of this condition is important. When the tympanic cavity is attacked antiphlogistic measures with complete rest is of great value. Dry heat to the mastoid and hot douches to the canal are of advantage. Blood-letting by leeches and by incision through the membrane or canal wall is recommended.

Regarding surgical procedure on the mastoid his conclusions are:

- 1. Wild's incision is not good surgery.
- 2. Conservatism and expectancy are in order so long as there is no pus demonstrable outside of the middle chamber.
- 3. When rational signs of pus are recognized all temporizing must cease and sound surgical principles must be followed.
- 4. A clean sweep of all diseased tissue must be made and all sinuses explored.
- 5. Have a clean field before you in operating. Make a long incision.
 - 6. Good drainage must be established.
- 7. In chronic cases it is rarely sufficient to clean out the mastoid alone.

OTITIC BRAIN DISEASES.

Cerebellar Abscess.—McConachie and Hartwig (7, Apr. 8) says, in speaking of cerebellar abscess (3, Aug.): The diagnosis of cerebellar abscess must be founded upon the complexity of the symptoms, viz., severe headache, nausea, vomiting, vertigo, a staggering gait, facial paralysis, choked disks with retinitis, slow pulse, temperature low, slowing of the respiration, Cheyne-Stokes respiration, yawning, slowness of cerebration and general apathy, irritability, intolerance to light, delirium, rigidity of the neck, motor and sensory paralysis.

When complications exist, as sinus thrombosis, and leptomeningitis, other symptoms supervene to make diagnosis difficult. In sinus thrombosis rigors and chills with high temperature and increased heart action are almost invariably present, with tenderness along the course of the jugular vein. In leptomeningitis, there is high temperature, rapid pulse, general irritability and marked acuteness of special senses.

A cerebellar abscess usually terminates in death when operative procedures are not used. The abscess contents escapes and a new inflammatory action is set up. Abscesses have become encapsulated and remained quiescent for years without giving rise to serious trouble, but such cases are rare. We should never anticipate such a result. Our duty is to operate early if a successful result is to be hoped for. The time to operate is when we have made our differential diagnosis—a deep problem and sometimes a very speculative one.

J. Orme Green (123, April) reports three cases of abscess of the cerebellum from infection through the labyrinth. An analysis of the symptoms in four cases is given. In each infection of the labyrinth occurred in the course of an ordinary otorrhea. The sudden attack of vertigo he believes marks the beginning of the infection of the labyrinth and is caused by irritation of the cristæ acusticæ of the ampullæ of the semicircular canals. In the three cases of abscess the headache was bilateral. In the case of simple caries of the labyrinth without abscess the headache was unilateral. While the presence of optic neuritis, together with other symptoms, is confirmatory of brain abscess, its absence has no negative value.

In cerebellar abscesses of otitic origin the location of the abscess is determined by the route through which the infection travels from the middle ear. If through the antrum and mastoid the abscess will be in the posterior part of the cerebellum, and can be reached through the mastoid, or the opening can be extended backward as far as is necessary.

If the infection reaches the cerebellum through the labyrinth the abscess will be in the anterior portion. Anterior cerebellar abscesses are exceedingly difficult to reach from behind the sinus, or from an opening in the occipital bone below the superior curved line, and the conditions for drainage in this locality are not favorable. From a point just in front of the sinus the distance is much less, being about one-fourth of an inch to the orifice of the aquæductus vestibuli and about three-fourths of an inch to the external auditory meatus. From an opening in this location it is comparatively easy to reach an abscess immediately behind the petrous portion of the temporal bone.

In the following analysis certain characteristics in the symptoms will be noticed which ought to be helpful in the location of cerebellar abscesses:

Analysis of the Symptoms.

E. C. S.	A. C.	T. P.	Т. В. Н.
O. M. S. chr. r. 20 years.	O. M. S. chr. r. years.	O. M. S. chr. l. 11/2 years.	O. M. S. chr. l. 25 years.
Sudden vertigo.	Sudden vertigo.	Sudden vertigo.	Sudden vertigo.
Pain in ear.	Pain in ear.	Pain in ear.	Pain in ear.
Headache, vertex, bilateral.	Headache, frontal, bilateral,	Headache, frontal, bilateral	Headache, unilat- eral, left.
Divergent strabis- mus, both.	External strabismus, l.		Nystagmus on looking to r.
No optic neuritis.	No optic neuritis.	Optic neuritis, most in l.	No optic neuritis.
	Knee-jerks present.	Knee-jerks absent in r. Facial paralysis from	Knee-jerks present.
		ear.	
	Nausea.	No nausea.	Nausea.
No chills or fever.	Chills and fever. Leucocytosis, 20,100.	No chills or fever. Leucocytosis, 14,000.	No chills or fever. No leucocytosis.
Delirium at end.	Delirium at end.	Delirium at end.	No delirium.
Sclerosis of the bone.	Sclerosis.	Sclerosis.	Sclerosis.
Caries into labyrinth.	Caries into labyrinth.	Caries into labyrinth.	Caries in labyrinth.
Carles into labylines.	Arachnitis of cere- brum and cerebel- lum.	Encephalitis of cere- bellum.	No brain disease.
Abscess of cerebel- lum, 11/8 in. x 1/4 in.	Abscess of cerebel- lum.	Abscess of cerebel- lum, 13/4 in. x 1/2 in. x 1/4 in.	
Infection from meatus internus.	Infection from aq. vestibuli	Infection from whole labyrinth.	

In a case of cerebellar abscess reported by Ernest Waggett (2, Sept.), it will be noticed that the symptoms are similar to those given by Greene in the preceding analysis.

The patient, a man aged twenty-six, had chronic otorrhea, with polyp, of right ear. Vertigo of three weeks' duration. Pain in ear. Facial paralysis suddenly developed involving all branches of the nerve.

Schwartze-Stacke operation relieved pain, but general health continued to decline. There was loss of appetite, constipation and foul breath. The optic disks were pink and ill defined. Vertigo continued upon sudden movements of the head. There was nausea and vomiting once or twice. Pain in the occipital region, shifting from the left to the right side. Right pupil somewhat dilated and sluggish in reaction, temperature slightly above normal. Pulse 60 to 65. Staggering gait. Slight ataxia of right arm. Exaggerated knee-jerk. Patient lay on left side. On the twenty-first day a second operation was performed for exploration of the cranial cavity. A 2-5 inch trephine was applied one inch and a quarter behind the center of the meatus and a quarter of an inch above it.

The meninges bulged into the opening and pulsations were absent. Exploration of the cerebellum with Horsley's pus-seeker failed to reveal pus. Five days later when the patient appeared to be dying exploration was made with the finger in the direction of the apex of the petrous and an elastic rounded body was felt between the finger and the tentorium, three and one-half inches from the opening in the skull. The pus-seeker was made to penetrate this body and an ounce and a half of foul, green pus was evacuated. The patient recovered, but for some time had paralysis of right external rectus, dimness of vision, and weakness of right hand and arm. Facial paralysis continued.

[From comparison of the symptoms with the foregoing analysis, and from the location of the abscess, it would seem that the infection had reached the cranial cavity through the labyrinth and that pus was found where it might have been expected.]

B. Alex. Randall (7, Nov. 11) reports four cases of cerebellar abscess following suppurative otitis media.

The first case, a boy of fifteen years, had right chronic suppurative otitis media for three years. Following a slap on the ear he had pain, nausea and malaise. After five days the mastoid was tender, red and swollen. Temperature 100.6 degrees. Two drachms of foul pus was evacuated from the The bone was hard, soft tissues over the mastoid process. sclerosed and pus found only in the antrum. No sinus was found leading to the cranial cavity. The antrum was curetted and packed. The day following the operation the tempera-Examination of the chest ture went up to 105 degrees. showed pleural friction of right side which rapidly went on to effusion and lung consolidation. The left lung soon became involved. There was no rigor, no jugular tenderness and no swelling about the neck. Purulent expectoration and increasing respiratory failure marked the progress of the lung The patient died six days after the operation.

The autopsy twenty-four hours after death showed great destruction of the lung tissue with pleural empyema, worse on the right side. The dura was engorged and adherent but apparently intact, merely conjested bone separating it from the tympanic cavity. There was an extra-dural abscess over the tympanic roof and another abscess as large as a pigeon's egg in the cerebellum, with a thick pyogenic membrane. The membrane was thinnest where it was adherent in proximity to the antrum.

Randall thinks, while this abscess may have antedated the injury, that it was probably caused by acute inflammation awakened by the blow.

In the second case, a girl of fourteen years, the posterior wall of the tympanic cavity was gone. The mastoid was one large cavity and the sigmoid sinus was bare for an inch. There was considerable caries of the inner table of the skull, and a number of small extra-dural abscesses were found. The

condition of the patient improved for three weeks, when she developed brain symptoms again. In the second operation more caries was found and the wound enlarged backward. The rongeur bit off the large mastoid emissary close to the sigmoid sinus and the operation was abandoned because of hemorrhage. The hemorrhage was controlled but the patient continued to grow weaker and died four days later.

Randall believes that there was a cerebellar abscess for which he should have searched through a separate opening instead of enlarging the primary wound.

The fourth case, a girl aged four years, with a post-scarlatinal mastoid abscess of the right side, which had been incised three weeks before, leaving a post-auricular sinus. There was vomiting, convulsive twitchings of the left arm and leg and head movements toward the right side. The right external rectus muscle showed paresis and the right pupil was larger than the left. The pulse was 88, temperature 98.4 degrees. There had been general convulsions.

In the operation the mastoid was emptied of carious bone and granulations, but no defect of the inner surface could be detected; so in the absence of localizing symptoms further intervention was delayed. The patient reacted and rested comfortably until midnight, then sank rapidly and died the next morning.

Autopsy showed an abscess three by five centimeters occupying nearly the entire right lobe. There was considerable plastic lymph at the base on pons and medulla, and some clouding in the cerebral sulci.

Dunn, of Richmond (128, xxvii, No. 6), reports a case of purulent mastoiditis complicated by epidural subpetrous and post-œsophageal abscesses; death presumably from internal hemorrhage (3, Feb.). A man, aged 38, for five weeks had suffered from severe pain in the left ear. At no time had there been any discharge. On account of swelling of adjacent tissues the membrana tympani could not be clearly

seen. There was swelling over the mastoid and partial left facial paralysis. The mastoid was opened and practically the whole process was infiltrated with pus and granulations.

For ten days the patient did well but complained of insomnia and some stiffness in the left side of the neck. A swelling now appeared about the upper end of the sternomastoid. Thinking that an abscess had formed an incision was made but no pus found. The skin was now reflected from the post-mastoid region and the sinus exposed. An epidural abscess containing about one drachm of greenish pus was opened. This abscess lay between the sinus and the inner table of the skull, following the lateral sinus along its course about half of an inch and the sigmoid for about the same distance.

The patient continued to complain for a number of days of great pain when attempting to swallow. He referred the pain to the back of the larynx. Examination of the pharynx and larynx was impossible on account of the patient's inability to open his mouth. Examination of the external ear canal showed its lumen very small and the upper wall extremely sensitive to the slightest pressure. The patient stated that he had drawn from his nose into his throat a lot of badly-tasting matter and this suggested the possibility of pus in the middle ear escaping by way of the Eustachian tube.

Under chloroform the operation wound was again examined; while probing in the upper posterior angle of the auditory canal an abscess was opened from which considerable pus escaped. While under the anesthetic the patient coughed up a considerable amount of pus. The pain in swallowing persisted and he experienced great pain when the neck was moved. The swelling under the sterno-mastoid increased. In making pressure over the swelling in the neck a great quantity of pus was seen to flow from the mastoid antrum. This abscess being opened, was found to be situated below the inferior face of the petrous portion around the sty-

loid process and foramen. Two weeks later the abscesses in the neck burst into the œsophagus and much pus was expectorated. The discharge diminished greatly but the patient did not regain his strength. Before death he passed by the bowel much clotted blood, probably as a result of rupture of a vein into the post-œsophageal abscess. No autopsy was made. The mistake was made in not recognizing at first a case of Bezold's mastoiditis.

Milligan (2, Jan.) reports a case in which a large fistulous opening through the skull was found in the posterior portion of the mastoid process leading directly down to a large extradural abscess.

Cerebral Abscess.—E. J. Moure, of Bordeau (2, Nov.), reports a case of cerebral abscess with unusual features. An operation was done for mastoid abscess with cerebral symptoms. Search for the brain abscess had to be abandoned because of hemorrhage. Eleven days after the operation the abscess opened spontaneously through the opening in the skull made at the time of the operation. Nine days after the abscess opened a cerebral hernia occurred as large as a small orange. The autopsy showed a large abscess cavity without a limiting membrane and that the abscess had communicated with the ventricle.

Moure thinks this case is another proof that a brain abscess without a limiting membrane is a serious condition, and that when in doubt, it is best not to attempt to wash out an abscess cavity.

E. Gruening (2, July), at the meeting of the American Otological Society, reports a fatal case of brain abscess which presents certain points of interest. The patient, a boy of seventeen, had had post-scarlatinal suppuration of the right middle ear from infancy. The discharge ceased, headache began, with drowsiness, and acute pain over the mastoid.

In the operation pus and granulations were formed in the mastoid and antrum, the posterior fossa was opened and pus escaped. The operation at the time was not carried farther, but nine days afterward the pain, elevation of temperature and stupor returned. In a second operation pus was found external to the dura. An abscess of the temporosphenoidal lobe was found and evacuated. In the autopsy nine days later the abscess was seen to communicate with the descending horn of the lateral ventricle.

D. Milton Greene, Grand Rapids, Mich. (7, Nov. 11), reports an exceedingly interesting case of brain abscess. The patient, a physician, had been suffering with some obscure disease which had been diagnosed at first tonsillitis, then typhoid-pneumonia. The trouble began with pain in the left ear, side of head and face, with great swelling of the neck and throat. He had chills, fever, sore throat, swelling of the tonsils, and rupture of a tonsillar abscess.

After five weeks a severe chill occurred; the tongue was coated a dirty gray. He was greatly emaciated, mind was clear, slept but little, bowels constipated. An abscess formed over the tenth rib of the left side, from which several ounces of pus were evacuated. Three days after the chill the patient was able to utter but one word, "no." This one word was used for everything, but, the patient realizing its wrong use, would nod his head to indicate yes.

Ophthalmoscopic examination showed the retina normal except somewhat anemic. Otoscopic examination showed the left auditory canal inflamed and swollen in its posterior superior portion, the membrane bulging and the membrana flaccida inflamed. Pus was clearly visible through the drum membrane. The mastoid and neck below the ear were edematous. Pus was flowing from the region of the meatus of the left Eustachian tube.

The mastoid and antrum were opened and a small amount of pus was liberated. At the same time a large abscess of the left side of the chest was opened. A day or two after the operation paralysis of the right side of the face was noticed, which gradually extended to the shoulder, arm, forearm and fingers, then to the hip, thigh, leg, foot and toes. Later abscesses were opened in the pharynx and in the neck near the jugular of the left side.

Greene believes that an abscess had formed in the "utterance center" of Broadbent, but does not say why the brain was not examined at the first operation. Further operation was refused until five weeks afterward, when the skull was trephined a quarter of an inch in front and two inches above the auditory meatus. A half inch beneath the surface an abscess was found containing about three ounces of offensive pus. Large, flaky chunks of pus were removed with the syringe and with the finger. The abscess cavity was packed with iodoform gauze which was changed daily after the first forty-eight hours.

The speech gradually returned and three days after the operation the motor paralysis had so improved that the patient was able to walk. He had a good appetite, slept well, and gained fifteen pounds in two weeks. The wound healed nicely and the discharge had almost stopped when the patient went to the country. For several weeks he continued to report improvement; then bad symptoms began and Dr. Greene heard that the wound was reopened and the brain aspirated with negative results. The patient died suddenly a few weeks later from cerebritis.

R. Mueller (18, Nov. 9), in writing on Operative Treatment of Otitic Meningitis, says (7, Dec. 9): The existence of a serous form of meningitis has been recently established, and also the fact that, like the suppurative form, it may originate in an otitis or its consequences, and compel surgical intervention. Mueller describes two observations. In both, the diagnosis of a cerebral abscess consecutive to otitis had been made, but no abscess was found when operated on, and yet both patients were cured by the mere fact of the intervention. The correct diagnosis proved to be meningitis externa serosa

chronica in one, and serosa interna acuta in the other. The symptoms in the first indicated a compressing cerebral abscess, and the sensitiveness of the left mastoid process in connection with a preceding otitis treated by curetting the antrum left little doubt that the trouble had originated from the ear.

The slow pulse and congested retina suggested compression inside the skull, while headache, motor weakness, hyperesthesia of the right side, vomiting, vertigo, numbness and slight elevation of temperature fitted into the picture of a temporal lobe abscess, although there was no aphasia. The absence of stiffness in the neck and high fever and the regular pulse militated against suppurative meningitis. No pus was found, but the amount of serous fluid indicated a pathologic increase, especially the abundance that gushed when the hard membrane was incised, and the amount that continued to exude for days afterward. The affection was evidently a suppurative meningitis in its incipient stage of hyperemia and serous The chronic character was evidenced by the longcontinued headaches that had preceded the intervention, and the fact that all of the symptoms were not cured; the disturbances in gait and equilibrium still persist, showing that permanent lesions had been induced, and recent vomiting and vertigo suggest that the process still continues in a mild chronic form. Mere incision of the brain membrane and draining, however, saved the subject's life, and Mueller advances reasons for preferring this procedure to lumbar puncture in this and similar cases. In the second observation the diagnosis was still doubtful for weeks after the intervention. The brain matter protruded through the incision and portions of it kept necrosing and dropping off, until a most remarkable amount of brain substance had been lost without apparent injury.

The threatening symptoms induced by the compression of the brain lost their intensity from the moment the brain was incised and the compressed brain substance found an opportunity to stretch and loosen. The hernia of brain matter gradually subsided, the serous effusion diminished and the patient recovered without incident. This case emphasizes the advantages of the method always followed by the writer, of never operating on an otitic cerebral abscess through the wound in or by the ear, but always entering from without, where hernia, etc., are under control.

In a mastoid operation reported by A. Lucae (80, Oct. 2), while removing a spicula of bone from the wall of the cranial cavity, cerebro-spinal fluid suddenly gushed out in such quantities that the operation had to be abandoned.

For five weeks the discharge continued profusely. During the time there was no elevation of temperature, no vertigo, no change in the pulse or respiration and the recovery, though slow, was uneventful.

H. J. Hamilton (94, Vol. xxv, No. 2) reports a case of purulent otitis media, beginning December 31st. Bloody discharge from the ear January 1st. Became delirious January 8th. Died January 10th.

In the autopsy pus was found in the mastoid. The pia mater and arachnoid at the base were congested and infiltrated with thick, yellow pus.

Both the blood and the pus gave pure cultures of streptococcus pyogenes. The patient was thirty-two years old, and a heavy drinker.

[From the number of similar cases reported it would seem that the latter condition might account for the lack of resistance to the streptococcus.]

Whiting (128, Vol. xxvii, No. 6) contributes an article on the *Clinical Stages and the Technique of the Operation* for Sinus Thrombosis (3, Feb.).

The author deals with:

- 1. The Clinical Stages of Sinus Thrombosis.
- 2. The Technique of the operation for the relief of the same.

The course of sigmoid sinus thrombosis may be conveniently designated for the purposes of clinical classification as comprising three stages, characterized by local and systemic manifestations; the anatomical appearances of the sinus wall, the pathological changes in the clot and the signs of circulatory obstruction may be denominated as local factors; while rapid and excessive fluctuations of temperature, frequently repeated rigors, peripheral or central metastases, etc., embrace the essential systemic symptoms

The clinical stages are designated:

First Stage: The presence of a thrombus, parietal or complete (chiefly composed of fibrin, red blood cells, exfoliated endothelium, leucocytes and homogeneous protoplasmic cells), not having undergone disintegration and accompanied by slight or moderate pyrexia, rigors being usually insignificant or absent.

Second Stage: The presence of a thrombus, parietal or complete, which has undergone disintegration with resulting systemic absorption, characterized by frequent rigors and pronounced septico-pyemic fluctuations of temperature.

Third Stage: The presence of a thrombus, parietal or complete, which has undergone disintegration with systemic absorption, accompanied by rigors, rapid and great fluctuations of temperature, and central or peripheral embolic metastases, terminating usually in septic pneumonia, enteritis or meningitis.

The diagnosis of sinus thrombosis in the first stage is seldom made preliminary to the operation for mastoiditis, and its detection follows, as a rule, the recognition of extension of carious disease, through the inner table along the course of the sigmoid groove.

The only safeguard against encountering the increased gravity of the second stage is to operate immediately upon the recognition of the first stage. The transitional period between these two stages is usually brief, and its completion is commonly heralded by a sharp rigor.

THE TECHNIQUE OF OPERATION.

The usual curvilinear mastoid incision is made extending from one inch below its tip to a point one-half inch above the temporal ridge. A second incision is made, beginning at the center of the first and extending backward two inches or more toward the occipital protuberance.

The mastoid antrum and pneumatic spaces are opened and along the posterior border the bulging convexity of the sigmoid groove is seen. The sigmoid groove may be quickly opened with curette or broad-beaked rongeur, but under no circumstances must a chisel be employed.

The most accessible part of the sigmoid groove for opening is the knee and the descending portion. The knee lies at about the level of the supra-meatal spine, and usually one-half to two-thirds of an inch posterior to it. When the groove has been opened further exposure of the sinus is most readily accomplished with the rongeur.

When evisceration of the thrombus is complete the bleeding is best controlled by pressing a wad of closely folded gauze upon the distal extremity of the opening in the vessel. Bleeding from the jugular bulb is controlled by packing gauze into it. The removal of the gauze two or three days later is never followed by hemorrhage of any significance.

The shock attendant on the more serious of these operative procedures is frequently very pronounced. Intravenous injection through the median basilic vein of sixteen to twenty-four ounces of normal salt solution at a temperature of 105° to 108° F. or an injection into the bowel of this salt solution at a temperature of 110° to 116° F. should be employed.

At the moment of opening the sinus wall, the foot of the operating table should be elevated; firstly, because the blood pressure in the sinuses of the dura mater is measurably increased and the likelihood of admission of air to the open vein reduced to a minimum; secondly, in order to maintain the equilibrium of the general intracranial fluids, which might

be seriously disturbed by suddenly induced anemia of the brain, consequent upon the very copious bleeding attending the sinus operation.

Koller (68, Feb. 11) reports a case of phlebitis and thrombosis of the sigmoid sinus and the jugular vein of aural origin. The patient, a girl of thirteen years, when admitted to the hospital, had a septic appearance, was conscious, but was very hard of hearing. Soon after admission she had two chills of short duration. After the first the temperature reached 104 degrees, and after the second 106 degrees. Examination revealed a thrombo-phlebitis of the right sigmoid sinus and jugular vein. Surgical interference was decided The usual operation was made, the patient, however, being already unconscious before the anesthesia was commenced. The thrombosed vein was incised and a sharp spoon passed up toward the bulb. The thrombus was found to be half solid. Incision was then made into the sinus and several drams of foul smelling pus evacuated. Immediately after the operation the patient looked cyanotic, but soon reacted. The next day pain developed in the chest and crepitant rales over the left lung. Respiration became shallow and finally ceased entirely. No autopsy was allowed.

Dunn of Richmond (128, Vol. xxvii, No. 6) reports a case of "Purulent thrombosis of the lateral sinus, epidural abscess, extensive subperiosteal abscess with edema of the scalp, face and neck" (3, Feb.). The case was a young man, aged seventeen, with a history of scarlet fever and repeated attacks of right middle ear inflammation. The whole scalp was very sensitive to touch, and general edema extended from the nape of the neck to the eyebrows. This edema was greatest in amount over the occipital region and on the right side. There were irregular chills, high fevers, profuse sweats, followed by temperature sinking to normal. Occasionally the right ear discharged fetid pus.

The neck was swollen in front and particularly on the right side as far down as the clavicle.

The right mastoid antrum was opened and fetid pus found. Curetting backward an epidural abscess was found. The lumen of the sinus was filled with a clot which was cleared out toward the bulb and then posteriorly till a free flow of blood was obtained. Subsequently a large collection of pus formed beneath the scalp in the occipital region. Incisions were made and the parts drained.

Recovery was uneventful, except for paralysis of the right external rectus, which continued for a time, then disappeared.

Knapp, New York (128, Vol. xxviii, No. 2), reports two cases of *Otitic Sinus Thrombosis* (3, Aug.). Case 1. A girl, aged ten, with a history of intermittent otorrhea since her first year. She complained of pain in the left ear, forehead and occiput; had vomited and had a shaking chill, followed by fever. There was hyperesthesia of the skin and she was constipated.

The mastoid on both sides appeared normal, free from redness; the left slightly larger than the right.

Fetid pus came from the left ear. On this side the region below the mastoid and in front of the sterno-mastoid muscle was very painful to the touch. Temperature 105 degrees Fahrenheit, pulse 120, respiration 40 to 45. Choked disk was readily seen in both eyes.

The mastoid antrum and middle ear were opened and the attic cleansed with a sharp spoon. The ossicles were absent. The wound was extended by chiselling the bone in a backward direction and at a depth of three to four mm. the lateral sinus was reached. It was deep black and plainly pulsating. A hypodermic syringe withdrew dark blood without odor. The wound was packed with sterile gauze and the child put to bed. Four days later, when the dressings were changed, a large portion of necrosed sinus and contents, with gangrenous odor, were removed. Fresh blood came from above, but not from below. There was cough,

pain in the back, temperature 105 degrees Fahrenheit, pulse 145, respiration rapid and laborious. On the sixth day she died.

At the autopsy the sinuses were found filled with dark blood; the sigmoid sinus was destroyed. The jugular bulb was filled with a dirty whitish-yellow clot, which, toward the beginning of the vein, gradually contracted, adhering to the wall. Immediately below the clot the jugular vein was empty, with smooth walls and normal caliber, but thence it rapidly contracted to a narrow tube, with an even diameter of two or three mm., down the whole length of the neck. The walls of the tube had the thickness of an artery of small caliber. Its inner surface was smooth, but the lumen was interrupted by round grayish pellets at intervals of 2 to 2.5 cm., adherent to the walls of the vein. They had the appearance of coagulated fibrin.

Case 2. A man aged eighteen, who had occasional severe attacks of earache as far back as he could remember. On a number of occasions growths were removed from the right ear. A mastoid operation had been performed, the antrum exposed and the posterior wall of the auditory canal removed. This operation wound never fully healed; a fistulous canal led deep into the substance of the bone. At this time he came under the author's care. The membrana tympani was gone. Bare bone was felt at the bottom of the middle ear. The probe passed under the lateral wall of the attic and considerably backward. Temperature was 100 degrees Fahrenheit. The right ear was totally deaf. The diagnosis was: Extensive chronic caries of the mastoid, attic and tympanum, extending into the labyrinth.

A radical operation was done, removing all carious bone. The patient did well for three weeks, when general symptoms of pyemia, with articular metastases developed, but there was freedom from lung and meningeal symptoms.

Two further operations were done and in the last a puru-

lent thrombus was removed from the transverse sinus. The patient made a slow, but complete recovery.

The author makes mention of the well-known fact that sinus thrombosis, which commonly shows articular metastases, gives a better prognosis than thrombosis with pulmonary mestastases.

F. Roepke (128, Apr.) contributes an article on *Otitic Brain Abscess*, which is abstracted (7, Aug. 19). The paper discusses the subject of brain abscess from ear disease, quite thoroughly, noticing the literature in detail. After describing the technique of the operation and discussing the question as to whether brain abscess can disappear spontaneously, which he thinks can be admitted in rare cases, he gives the results of 141 cases operated on, and which he has been able to collect and analyze in detail. Of the 141 operated cases, there were 57 permanent cures, or 40.4 per cent, a result which refutes the very unfavorable estimate of some authors as to the curability of this condition. Of the 20 cases following acute otitis, 43.2 per cent were cured, and we have very nearly the same percentage—43.1 per cent—of the 109 after chronic otitis.

The operation, therefore, has about the same prognosis in either case. The symptoms which give the indications for the operation do not help us very much as regards prognosis. Cases with normal or subnormal temperature are frequently more favorable than those which run a violent course, as the virulence of the infection seems to be less and complications are less likely to occur. The presence of focal symptoms before operation is of no value in estimating the future course.

The size and site of the abscess are important. The small abscesses situated near the surface of the brain naturally afford a better prognosis than the larger and deeper ones. It is especially important to note whether the abscess contains pathogenic germs. The color and odor of the pus give

no clue as to its virulence. When the abscess lacks lining membrane, and is irregular in its outline, it is more serious, and the less brain tissue disturbed during the operation, the better.

In his 141 cases, 81 were operated on through the squama, with 38.3 per cent recovered; 43 operated through the tegmen, with 40.2 per cent cured; in 7, where the combined opening was made through both, 5, or 71.1 per cent, recovered.

FACIAL PARALYSIS.

Grunert (13, No. 20) classifies facial paralysis due to ear conditions:

- 1. Those due to inflammatory affections.
- 2. Those due to tumors.
- 3. Those due to injuries.

Simple acute otitis media may cause hyperemia of the neurilemma or when the wall of the aqueductus Fallopii is deficient the exudate may make pressure on the nerve trunk.

In chronic cases, especially when complicated by caries, necrosis or cholesteatoma, the function of the nerve may be arrested by the escape of pus into the canals, or by pressure of granulations, cholesteatoma or a sequestrum of bone. Of the tumors, carcinoma is the most frequent cause of paralysis.

In fractures through the temporal bone the nerve may be lacerated or an effusion of blood in the canal may occur. In this class also belong paralysis due to operative procedures on the mastoid and in the middle ear.

In an article on Facial Paralysis of Otitic Origin, Moure (11, Dec. 17, '98; abst. 1, June) says facial paralysis, due to old otorrhea, is usually caused by compression of the nerve by fungus growths or a sequestrum. It is only very rarely

that it is possible to determine the point of compression. Electric tests are not to be depended upon. It is not necessary to search for the nerve. Open the mastoid cells, scrape, curette, resect and extirpate every scrap of diseased bone, especially in the region of the aqueductus Fallopii. Do not pay any attention to the nerve except to avoid injuring it; removing the compression will prove sufficient.

The author concludes, insisting upon the immediate suture of the retro-auricular incision without leaving the slightest solution of continuity by which infection might enter.

G. L. Richards (3, May) thinks facial paralysis is a far more serious sequel of mastoid and tympanic operations than it is usually considered. He refers to a number of textbooks by prominent otologists in which the subject is hardly mentioned. He says that to the aurist of the large city an occasional case of facial paralysis, occurring in connection with some ear operation, may not be of much consequence, but to the physician of the smaller place the presence of one or two persons in the community with faces drawn to one side is an advertisement not to be desired. Especially is this the case if for any reason the doctor is given the credit of having produced the deformity.

Richards gives some important points in the anatomy, reviews the literature of the subject and discusses prognosis and treatment.

In a paper read at the Mississippi Valley Medical Association, Geo. F. Keiper of Lafayette, Ind. (109, Nov.), emphasized the importance of avoiding the facial nerve in aural surgery. He believes that surgeons have been careless in this regard and that patients have suffered in consequence. If the nerve is wounded or cut it cannot be regenerated under one year, if at all. Wounding the nerve may occur, notwithstanding the precautions which may be taken.

In a case operated by Keiper partial paralysis occurred, which he believes was due to an unusual course of the aqueductus Fallopii through the temporal bone.

[While the facial nerve does sometimes pursue an anomalous course, the temptation is great to believe that it does in all of our cases of facial paralysis following operations.]

J. W. Murphy (48, March 4) records a case of facial paralysis of ten years' standing, caused by chronic suppurative otitis media. The wall of the Fallopian canal was eroded and the nerve destroyed. The necrosis had also extended to the horizontal semicircular canal. Recovery from operation was rapid. The staggering soon disappeared, but the facial paralysis continued.

Astier (11, Nov. 5, '98) reports a case of complete general right-sided paralysis, including right facial paralysis from fracture of the skull. The patient, a man fifty-seven years of age, gave a history of having fallen down a stairway. The mastoid process was opened, the skull trephined and the fracture located. There was no brain abscess. Recovery was complete both of the paralysis and of an otorrhea of long standing.

Stucky of Lexington, Ky. (7, Nov. 11), reports a case of fracture of the base of the brain, with deafness, tinnitus, vertigo, exophthalmus, facial paralysis and mastoiditis. Operation with recovery.

The injury was caused by a heavy blow on the top of the head. There was unconsciousness for a short time, followed by great noise in the right ear, deafness and restlessness. A week later facial paralysis and vertigo developed. Five weeks later he presented a dazed, listless appearance, with considerable bulging of the right eye—exophthalmus—with several hemorrhagic spots in the deep conjunctiva and some dimness of vision. Ophthalmoscopic examination was negative. His temperature was 101 degrees, tongue coated, pulse 72. There was complete paralysis of the right side of the face; almost no hearing in the right ear; swelling of the soft parts covering the mastoid, with marked tenderness over the tip and the antrum. The auditory canal was red and

swollen, the posterior superior wall bulging. The membrana tympani presented a gangrenous appearance, being of greenish black color, with a small laceration in the superior posterior quadrant, through which exuded an offensive fluid.

His mind was sluggish and he complained of constant headache, fullness and roaring of the ears, constant vertigo, a feeling as if he would fall to the left, and inability to sleep. There was some aphasia, unsteady gait, speech difficult at times and incoherent.

An incision, longer than is usual, was made from below the tip of the mastoid to one-half inch or more above the linea temporalis. The usual method of doing the radical operation was adhered to. After separating the soft parts and bringing the field into view, the membrana tympani was found to be so infiltrated and disintegrated that nothing short of the Stacke-Schwartze operation would accomplish anything. The periosteum was much thickened and very vascular; the antrum and cells were filled with firmly adherent blood clots: no pus: no evidence of necrosis. The attic and middle ear were also filled with clotted blood, but there was also evidence of inflammation and disintegration of the con-The malleus had separated from the drum membrane and the incus from the stapes, and were hanging in the cavity imbedded in the firm clot of blood. After removing the clots and inflammatory product, the parts were washed, first with hydrogen dioxide, then bichloride solution, I to 3,000; the membranous canal was brought into place and retained by a tampon, made of an iodoform gauze strip. The mastoid wound was dressed in the usual manner.

The following day his mind was clear, and all disagreeable symptoms had disappeared, except the facial paralysis. His recovery was uninterrupted. On the fourth day he was up and walking through the corridors of the hospital, and in one week was discharged from the ward, to be treated as an out-patient.

MALIGNANT DISEASES OF THE EAR.

Sarcoma of the External Auditory Canal.—Galbraith Connall of Glasgow (2, Nov.) contributes an article on sarcoma of the external auditory canal. Malignant tumors of the ear are comparatively rare. Of the two varieties carcinoma is more common than sarcoma. The statistics of the Glasgow Ear Hospital show that out of 15,000 cases admitted, only six were malignant. Of these, four were epithelioma, and two were sarcoma. The first case of sarcoma was reported in the British Medical Journal for October, 1897.

The second was a girl of six years. About eight weeks before she was admitted to the hospital a small growth was noticed in the external auditory canal. The growth was said to be painless. It was removed by the family physician, but rapidly recurred. The pain became severe. Seven days after the growth was first noticed facial paralysis developed. There was no history of purulent otitis media.

When admitted there was a grayish looking, exceedingly sensitive mass occupying the external meatus. With the probe it was found to be adherent along the posterior wall of the canal. There was great swelling of the tissues, both in front of and behind the ear, and the glands about the angle of the jaw were enlarged.

Under anesthesia the whole mass was curetted from the wall of the canal. The membrane was found to be destroyed and the inner wall of the tympanic cavity was denuded of periosteum. The operation relieved the pain and improved the general conditions, but the growth recurred within a month and developed rapidly, involving the mastoid and the regions in front of the ear. The patient died nine months after the first apearance of the growth. No autopsy.

Connall mentions three important points in diagnosis: 1. Severe pain. 2. Rapid recurrence. 3. Glandular involvement. These symptoms should always excite suspicion, and when present the diagnosis should be determined by a microscopical examination of the tissues.

Brose of Evansville, Ind. (128, Vol. xxviii, No. 2), reports a case of sarcoma of the middle ear (3, Aug.). A girl, aged three and one-half years, seven months before coming under the author's observation first complained of earache. Two months later she again had earache, which this time was followed by a discharge. A few weeks later the mother detected in the right ear a small reddish growth, which slowly became larger. A fetid discharge filled the auditory canal and the supposed polyp was removed with a snare. After the growth had returned and had been removed a number of times, there was observed an enlargement over the mastoid which rapidly increased in size. This swelling was of a soft, doughy consistence. There was no redness and it was not painful on pressure. Operation was advised and undertaken. A soft reddish-gray fleshy mass was found beneath the skin over the mastoid and was removed by the sharp curette. The outer table of the mastoid was eroded and with the curette the antrum was freely exposed. The external ear polyp on microscopic examination proved to be a small, round and spindle-cell sarcoma. Recurrence again speedily took place and the child died in convulsions about nine months from the date of the primary earache.

G. L. Cheatle (9, Oct. 22) reports a case of sarcomæ of the middle ear in a child two and one-half years old. When first seen the child had a large, diffuse, fluctuating, red, hot and painful swelling behind the auricle of the left side, and a large polypus filling the auditory canal. There had been suppuration for several months.

The mastoid was opened and cleaned of dead bone and granulation tissue. The subsequent developments showed the growth to be sarcomatous. Three months later, when death occurred, the growth was as large as the child's head, and was found to involve the deep glands of the neck and

overlying structures, the temporal bone and middle fossa of the brain. The temporo-sphenoidal lobe was found indented by, but was not a part of, the growth.

Carcinoma of Ear.—Robinson of London (2, Mar.) reports a case of squamous-celled carcinoma, following a chronic suppurative otitis media. The patient, a man, aged forty-six, had had a discharge from the middle ear for twenty-six years. There were the usual symptoms of mastoid involvement, and an operation was performed. Extensive necrosis was found and the disease was believed to be an extensive tuberculous lesion of the mastoid and tympanic cavity. The subsequent course of the disease led to a suspicion of malignancy and miscroscopic examination revealed its real character. From the histology of the tumor it is probable that it began in the external auditory canal, and that the irritation of the long-continued discharge was the etiological factor.

Lannois (11, Oct. 15, '98) reports a case of *epithelioma* in a woman of seventy-five years. The tumor began in the external auditory canal and had continued twelve years. Only during the last six months of the patient's life did it develop rapidly.

LABYRINTH.

Semicircular Canals.—Chas. J. Koenig (78, Jan 12) holds to the belief that the semicircular canals are the organs for the sense of rotation. That they notify us of the active, but not the passive movements of both the head alone and of the body. They are the organs of equilibrium, only so far as they keep us informed of the rotary, or wave-like movements of the body. He finds that each organ is more sensitive to movements toward its respective side than toward the opposite. Irritation, as well as anesthesia, interferes with their function.

Harrison Mettler (142, Aug.) believes that the center of equilibrium is the nucleus of Deiter, situated at the outer angle of the floor of the fourth ventricle. This nucleus is the meeting place of many special sensory and motor impulses from various other parts of the body, as well as from the labyrinth. Vertigo may be produced by irritation of any of the parts supplied with filaments from this nerve center.

Sea Sickness.—In an article on the etiology of sea sickness, Wm. Edgar Darnall (7, Mar. 11) reviews the anatomy and physiology of the semicircular canals, and accounts for sea sickness on the theory that the movements of the body cause a movement of the endolymph in the canals, which produces an over-stimulation of the nerve terminals. Then reflex impulses are sent to the centers which control vomiting and thus he accounts for the whole phenomena of sea sickness. In the treatment attention should be given to the nervous excitability, rather than to the stomach.

Trifletti (11, Jan. 7) reports an interesting series of experiments upon the semicircular canals of pigeons. He refers to the investigations of Goltz, Mach, Brener and Cyon, and his results coincide with their conclusions.

Exfoliation.—F. F. White (8, Dec. 17, '98) reports a case of exfoliation of the cochlea in a woman twenty-eight years old, and Von zur Mülen (54, No. 13) an infant two and one-half years old, in which almost the entire internal ear was eliminated.

Nerve Deafness.—Wm. Cheatham (17, July 15) finds that deafness following cerebro-spinal meningitis does not increase after the disease subsides, and if the labyrinth alone is involved, it is apt to materially improve.

Hearing Without the Labyrinth.—Max Kamm (156, Vol. iii, No. 3) takes the ground that hearing without some portion of the labyrinth is impossible (abst. 1, June). The

first pages of this monograph are taken up with a description of Ewald's experiments on pigeons. He removed the labyrinth, and after waiting until the birds had presumably recovered from the operation he subjected them to various tests; and became firmly convinced that under certain circumstances they were able to hear certain sounds. This ability to hear he attributed to the ability of the acoustic nerve to receive vibratory impression (imperfectly, to be sure, but still unquestionably) in much the same way as they are received by the hearing apparatus proper, and to convey them to the auditory center.

Ewald's views were combated by Bernstein and Matte of Jena. They, too, subjected pigeons to the same operation, but could get no evidences of reaction to any kind of noise. When they removed only the cochlea, there was evidences of slight power to hear. Even this was lost when the whole labyrinth was destroyed. Other experimenters began working along the same lines, and it was pretty definitely determined that the reactions shown by Ewald's pigeons were due to impressions upon other sensible nerves in various parts of the body. Numerous authors have reported cases where slight hearing remained after necrosis and exfoliation of the bony labyrinth.

A careful scrutiny of these cases, however, leads Kanım to the belief that either errors were made in applying the tests or else there were some remaining portions of the labyrinth which were still able to perform their functions.

The paper closes with the following conclusions:

- 1. After experimental destruction of both cochleæ in pigeons there remains a partial ability to hear.
- 2. After experimental extirpation of the whole labyrinth, no conscious hearing remains.
- 3. The auditory reaction of the animals in Ewald's experiments depends upon irritation of the sensible nerves of other peripheral organs.

- 4. It is physiologically conceivable that in human beings some trace of hearing might remain after destruction of the cochlea only.
- 5. Clinical observation makes it probable that total deafness follows necrosis of the labyrinth.
- 6. The cases that seem to contradict this are probably due in part to some remains of the labyrinth which are in condition to perform their functions, and in part to faulty observation.

MISCELLANEOUS.

E. Cooseman of Brussels (2, Nov.), in writing on occupation deafness, reports the examination of seventeen linen workers who carry on their occupation in the midst of the noise of the "beetling" machine, which is composed of twenty heavy hammers, giving four hundred strokes per minute.

In the workshop described there were twenty machines, giving in all 160,000 strokes per minute. The sound produced is a low-pitched, continuous roar or rumble, like the rolling of thunder. The workingmen are subjected to this deafening noise twelve hours a day and six days a week throughout the year.

Their time of service ranged from two to thirty-nine years. The man who had worked longest was sixty-one years old and his hearing was absolutely normal. All complained of more or less deafness immediately after leaving work, but in two or three hours the hearing had gradually returned.

In fourteen of the seventeen workmen lesions of the nose, pharynx or ear, or the inveterate habit of abuse of alcohol or tobacco was sufficient to account for the slight impairment of hearing.

The author explains the innocuous character of the noise in question by the fact that it is extremely dull, although violent, and that it is continuous instead of being intermittent, as in many occupations.

He concludes that all noisy trades are not necessarily injurious to the hearing; also, that in order that they should be injurious the following conditions are necessary:

- 1. That the workmen should be predisposed to affections of the ear by the existence of lesions of the nose or pharynx, or else by inveterate addiction to alcohol or tobacco.
 - 2. That the noise should be intermittent.
- 3. That it should be of a comparatively high-pitched tone.

Loss of Hearing in Aged.—Bogdanav-Beresoski (11, Jan.) made quantitative tests of hearing in 222 persons over fifty years old.

The loss of perception was found to increase so regularly as the age advanced that a table of presbykousia could be prepared similar to Donder's table of presbyopia.

Singer (19, Dec.) reports a case which he calls "Psychical Deafness." Heller is credited with the first use of the term as applied to the speechlessness of idiots.

Simulated Deafness.—John A. Thompson of Cincinnati (I, Jan.) uses the phonendoscope in determining simulated deafness of one ear. Both tubes were attached to the posts and inserted into the ears. The vibrating tuning fork was placed against the diaphragm and the sound was distinctly heard in the admittedly sound ear. Then the clamps on the fork were changed and at the same time, without the patient's knowledge, the tube leading to the normal ear was removed from the post. The patient heard the sound and noted the change of tone. The fact that the patient heard the changed tone proved conclusively that the deafness was simulated.

J. Kalic of Vienna (14, Feb.) describes a portable telephone which he uses in the detection of simulated unilateral deafness. The instrument has two microphones and

four receivers so arranged that the sound can be made to reach either ear of the one undergoing examination at the pleasure of the examiner. By changing the sound from one receiver to the other and noting the effect the examiner determines whether the deafness is actual or simulated.

Thread Worm in the Ear.—Koeble (6, July 30; abst. 1, Feb.). A girl of thirteen years, after a violent attack of retching, choking and sneezing, passed from the ear a threadworm about three inches in length, the worm making its appearance at the external auditory canal, whence it was removed by the fingers. The child had suffered for five days with an otitis media purulenta, as a sequel to an attack of pneumonia, and the drum membrane was undoubtedly already perforated and only served the worm as a means of exit. Before the parasite was passed the child had been rolling around in its bed and loudly shrieking for the space of an hour. Eight days later the perforation in the drum membrane had closed.

Diplacusis.—Teichmann of Berlin (128, Vol. xxviii, No. 1) contributes a paper on diplacusis, which he says is a functional alteration in which an objective tone is heard double. In making tuning fork tests in his own ears the author discovered that when the fork C-512 is dying away a few seconds before it ceases, he heard a second tone, a minor third below. This minor third is less intense than the original, begins suddenly with a delicate buzzing and dies away gradually with the original note. Teichmann believes that diplacusis is an abnormal increase of a physiological process, and originates in the labyrinth and nerve centers. He has learned, however, that it may be influenced by peripheral causes. While suffering from a slight cold, which affected his middle ears, he noticed that diplacusis was exaggerated.

R. W. Hastings (7, Dec. 24, '98) discusses noise as a factor in the causation of disease (3, Feb.). The author refers to the effect of noise on the ear itself, its effect on

existing diseases, its power to originate disease, and its effect on the health of the community. No excitement is more frequent, none more persistent than noise in neurasthenia. In illness it not only prevents sleep, which is an important factor in the therapeusis of disease, but also produces irritation upon the nerve centers. It is a factor in the causation of certain ear diseases, in the course of many acute and systemic diseases, and in many nervous diseases, chiefly neurasthenia.

Triple Personality.—A case of triple personality, occurring in the course of an otitis media, is reported by A. J. Erwin of Mansfield, Ohio (7, Jan. 7). The patient was a girl of eight years. After a short sleep she would arouse suddenly and assume unconsciously an entirely different personality. The voice, the language, the expression of the face and the actions would be those of an entirely different person.

The author believes that it is involuntary reversion of consciousness from the normal current to the mental state of an earlier date in the life of the individual.

L. R. Culbertson of Zanesville, Ohio (3, Feb.), reports a case of *delusional insanity*, resulting from auditory concussion. The patient gives a history of a gun being fired close to his head. Culbertson believes the concussion of the left auditory nerve from the report of the gun has caused deafness with partial degeneration of the nerve and consequent hallucinations of hearing.

The patient also has epilepsy, which "aggravates, and may be one cause of his delusion of hearing." The patient's own statement of his feeling is, "Ever since the shot-gun was fired at me, passing my right ear, I have been worried by loud noises, not in my ear, but external noises (such as slamming doors and unlooked for shooting, etc.). It feels as if someone were striking me in, or some place near, my ear."

Chervin (11, Oct. 15, '98) has discovered an anomaly which he finds is quite common among children, and is some-

times found in adults. It consists of an inability to distinguish between certain consonant sounds, notably between t and k, and between s and ch. Chervin thinks this is an hereditary imperfection, which may be overcome by education. He cites a case in which a mother and child made the same mistake. [The "anomaly" is much more likely a defect in education than a defect in sound appreciation.]

Somers (142, Dec., '98) writes on Entotic Sound Perception (3, Feb.). Entotic sound perception, which is due to causes in the ear itself, refers to sounds, such as the pulsebeats in the surrounding arteries and the rushing sound of the blood. The latter is especially strong when there is increased resonance of the ear, as in closure of the meatus or tympanum, or when fluid accumulates in the tympanic cavity, during increased cardiac action, or in hyperesthesia of the auditory nerve. Of the various causes, anemia and hyperemia are first enumerated. Local treatment is important, but constitutional measures are frequently equally so. Each case should be treated according to its indications.

In an article entitled "A Plea for the More Accurate Definition of Tuning Forks," J. Orme Green (128, Vol. xxviii, No. 1), refers to the different systems of notation used in the different countries. In France the single vibration or semi-vibration is used, while in Germany, England and America the full or double vibration is used. Green suggests that it would be better for both authors and readers if, in giving the numbers of vibrations the abbreviations v. s. were used to indicate single vibrations and v. d. to indicate double vibrations.

Gradenigo of Turin (2, Nov.) proposes to measure the amplitude of the vibrations of the tuning fork by painting a figure on the end of one of the branches. As the fork vibrates the image will appear more or less double. The duplicate images will overlap more or less, according to the size of the figure and amplitude of vibration. The middle or overlapping

part will be distinct in color and outline (field of double image), while the outside portions will be paler and less distinct (field of single image). As the amplitude of vibration lessens, the middle, or clear portion of the image, will become greater and the two images will gradually merge into one. This method of acountery is applicable only to forks of low tone, whose vibrations are of sufficient amplitude to show distinctly the double image.

Treatment of the Ears in Whooping Cough.—G. A. Stephens (7, Jan. 7) states that in whooping cough the ears are often diseased. There may be a purulent discharge or the ears may be only sensitive to pressure. He claims that the paroxysms of coughing diminish or cease entirely after treatment of the ears.

The external auditory canal should be washed night and morning with borated water and afterward painted with the following solution:

Cocaine hydrochlorategm.	1.25
Glycerinegm.	16.
Van Swieten's solutiondrops	
Aq. distgm.	I 5.

Deafness From Mumps.—Foster (93, Oct., '98) describes (1, Jan.) the clinical picture of deafness as a result of mumps, and points out that the deafness is only discovered in young children, when they begin to cease to talk, those between the ages of two and five nearly always becoming mutes. The writer has visited several state institutions for the deaf, and has always found one or more of the inmates whose hearing has been destroyed by mumps, and maintains that every child having the disease is in danger of complete deafness. He believes local antiseptic treatment of the throat and nose will aid materially in lessening the chance of ear complication. For the treatment of the deafness he

favors mercurial inunction, tincture gelsemium and nitrate of pilocarpine, with absolute rest in bed.

Syphilis and Deaf-mutism.—Hahn (18, Dec. 1, '98) says that syphilis may be the cause of deaf-mutism, either by closure of the Eustachian tube or by directly attacking the middle ear, the labyrinth or the auditory center.

In the latter case, of course, no lesion could be discovered during life. In case the middle ear is attacked, if no treatment is undertaken, the entire hearing apparatus is dissolved away in pus. In either case the disease begins suddenly without warning and without pain. Deaf-mutism follows as a natural consequence.

James F. McCaw (3, Feb.) reports a case of bilateral aural lesion following traumatism. The patient, a woman aged twenty-seven years, gives the following history: Family history negative. She had always been perfectly healthy, with no trouble from her ears until nine months before, when she fell, striking the back of her head. Immediately she was seized with headache, epistaxis, vertigo, nausea, vomiting and severe tinnitus. but retained consciousness. A physician was consulted who prescribed a sedative, when the symptoms gradually abated, and at the end of about four days had entirely disappeared, except the vertigo and tinnitus, which continued, but with diminished severity. At this time her hearing suddenly failed, so that she was almost totally deaf during the evening, with slight improvement after a night's rest, but gradually getting worse again toward evening. This phenomenon was noticed for about one week, after which there was no appreciable difference in hearing between morning and evening, the deafness being well marked, with constant tinnitus. The dizziness gradually disappeared and was entirely gone at the expiration of ten days to two weeks. For about four weeks following this there was slight improvement of hearing in the right ear. Six months after the accident only slight improvement having taken place, she consulted a specialist and says he removed something from her throat, but without the slightest benefit to hearing.

Upon examination, the canals, tympanic membranes and middle ear revealed nothing abnormal. There was found a high degree of impairment of hearing. Spoken words were heard only when very loud and close to the ear, and then un-The watch tick was not heard. through the solid media of the skull was very much diminished, especially for the high tones, which were not heard by air conduction. These findings were all exaggerated in the Tuning fork lateralized to the right side. the writer saw this case when far advanced (nine months after the commencement), he prescribed pilocarpine, potassium iodide and strychnine, but for the month she was under treatment there was no improvement. At this time she passed from under observation and has not been seen since.

While this case is apparently one of double labyrinthine trouble, well borne out by the functional examination, the kind and location of the lesion or lesions is still a matter of conjecture. These cases are exceedingly rare and have not been sufficiently studied to give us much light on the subject.

In fractures of the skull, involving the auditory apparatus, J. M. Elder (17, Oct.) advises that the auditory canal be thoroughly disinfected and that an antiseptic tampon dressing be kept in the canal to prevent infection of the meninges.

E. L. Vansant (7, June 24) reports "A New and Successful Treatment for Certain Forms of Headache, Deafness and Tinnitus Aurium." (3, Aug.). The clinical notes of eighteen cases form the basis of a report which show the remarkably prompt and permanent result from the simple expedient of syringing the nasal accessory sinuses and the Eustachian tube with a stream of dry hot air under pressure. The relief in many cases was immediate, and headaches of

a month's duration were relieved after a single treatment of a few minutes with hot air.

The effect of injections of dry hot air into the middle ear, for the relief of tinnitus and the improvement of the hearing was very marked. Better results were obtained in cases where catarrhal, rather than sclerotic, changes were present in the middle ear and Eustachian tube. The instrument used in these cases is like that employed by the dentist for a similar purpose.

Relations Between the Eye and the Ear.—Laurens (12, Nov., '98) has studied, in fifty-three cases the relations existing between diseases of the eye and those of the ear. After reviewing the literature of the subject he offers the following conclusions:

There exists between the organ of hearing and that of vision certain anatomical and physiological relations which explains the pathological reaction of the ear upon the eye, and inversely. The anatomical relations are established, first, through the brain (otic suppuration producing cerebral abscess, causing optic neuritis); second, by the trigeminus and the anastomosis of this nerve with the facial, so that, for instance, the syringing of the auricular canal may produce blepharospasms by the excitation of the auriculo-temporal nerve branch of the trigeminus, with anastomosis with the facial; through the connections with the oculo-motor ganglions (ocular affections developing in the course of diseases of the ear without cerebral complications).

The physiological relations are explained, first, by the function of the trigeminus, shown by experimental researches and second by the physiology of the semicircular canals.

The ocular disturbances observed in diseases of the ear are very numerous, the most frequent being nystagmus and optic neuritis. Ocular complications are not constant, but when they exist are of capital importance for diagnosis and

for surgical intervention, where the necessity of this is demonstrated.

Lannois of Lyons (2, Nov.) reports a case of *epilepsy of aural origin*. The patient, a man of twenty-six, had double otorrhœa from seven years of age with epilepsy beginning at thirteen. From the beginning, the epileptic attacks had averaged one per week.

At the beginning of treatment in 1897, one ear was dry and the other still suppurating, the drum membrane being entirely destroyed. Treatment cured the discharge in a few weeks, and increased the hearing distance for the watch from contact to 25 centimeters. At the same time the epileptic attacks ceased and after two years had not returned. Lannois believes that cases showing such well-marked relation between epilepsy and aural lesions are rare, and show the importance of treating the ears when they are affected in epileptics.

The same writer (155, Sept. 30) has examined ten persons who had been operated on for epilepsy, or exophthalmic goiter. Vaso-dilatation of the external ear with an increase in the temperature was noted in each case. The congestion extended into the tympanum and varied in duration from a few days to a few months. There was evidence in some cases that the vascular disturbance persisted even longer. These conditions raise the question of the possibility of sympathectomy being used to modify the nutrition of the entire auditory apparatus. In three cases the hearing was improved and in one tinnitus of long-standing was relieved.

In the instruction of those who are partially deaf, Victor Urbantschitsch (14, Feb. 23) lays stress upon training the attention of the pupil and insists that more benefits are to be derived from "strained attention" than can possibly be secured without the concentrated effort of the pupil.

Agoraphobia Due to Ear Diseases.—The fear of crossing a street or open space, or of going beyond a certain distance

from home, is a condition which has long been recognized. Disturbance in various organs of the body has been considered the cause of the phenomena.

Lannois and Tournier (126, Oct., '98) report ten cases in which agoraphobia was associated with auricular lesions, giving rise to vertigo or subjective sound sensations. Some of their cases were of chronic suppurative otitis media, some were of sclerosis and one was a typical case of Meniere's disease.

In three of the cases the agoraphobia was entirely relieved by the successful treatment of the ear disease. In some it was improved, while in others they were unable to relieve either the agoraphobia or the condition in the ear, which they believed caused it.

A. Guye of Amsterdam (2, Apr.) reports two cases of agoraphobia with ear disease. I. A school mistress, aged thirty-three, had suffered from agoraphobia for two years. For the past six months she had complained of deafness in right ear and tinnitus, with occasional attacks of vertigo, vomiting, falling down, etc. Under local treatment and salicylate of soda, internally, the Meniere's symptoms gradually subsided, but the agoraphobia remained unchanged. 2. A man with acute otitis media had suffered from agoraphobia for at least a year. The otitis media was relieved, but the agoraphobia remained.

According to Lannois and Tournier, "an auricular lesion is frequently the determining cause of agoraphobia," but farther observations and reports must be made before the exact relation between them can be established.

D. B. St. John Roosa (29; Apr.) calls attention to malaria as the cause of certain aural symptoms. In one case quinine in five-grain doses relieved symptoms of Meniere's disease. In another a high temperature, following a mastoid operation, was reduced by quinine. Malaria influences the course of every other disease with which it may be associated.

Ear Diseases Affecting Longevity.—Wm. L. Ballenger (163, May) read a paper before the Chicago Medical Examiners' Association on the relation of ear diseases to life insurance. Life insurance companies, through a study of their losses, and the causes of the same, have anticipated the medical profession in recognizing the gravity of certain ear diseases. Hence, we find them making such diseases a bar to life insurance.

The general medical profession looks upon most ear diseases as troublesome or unfortunate, but not dangerous. The laity look upon ear diseases with even less apprehension than does the average medical man.

Otologists are pretty well agreed, however, upon the gravity of pyogenic ear affections, as well as upon the curability of the same, although there are still some who, through timidity, ignorance or indifference, regard chronic suppurative inflammations with little interest or hope of cure.

The casualties attending ear diseases may be divided into two classes, namely: (a) Those due to accidental occurrences on account of deafness, tinnitus, and dizziness; and (b) those due directly to disease.

Diseases of the Ear Leading to Accidental Death.— The diseases attended by (a) deafness sometimes lead to death by rendering the person less capable of guarding against injury on railway crossings, street crossings, and other places where good hearing is a safeguard against injury; (b) tinnitus may lead to accidental death by the person confusing the noises of an approaching railway train, street car or other moving object with those subjectively experienced by himself; (c) dizziness, or aural vertigo, may occur at such a time and place as to arrest or prostrate the patient and place his life in jeopardy.

Diseases of the Ear Which Impair Health or Cause Death.—In taking up this part of the subject we come to some of the most interesting problems in otology. For in-

stance, the whole question of suppurative inflammation of the middle ear, attic, antrum and mastoid cells, with extensions therefrom, presents itself for consideration.

Primary acute attacks of otitis media are rarely followed by extension of the pathologic process to the brain or meninges. According to Politzer, the results of primary acute inflammation are as follows:

1. Most cases are completely cured. 2. Some are followed by sero-mucous catarrh. 3. Connective tissue adhesions cause ankylosis of the ossicles or bind them to the tympanic walls. 4. In some cases there is extensive loss of substance of the mucosa, with or without caries of the ossicles and tympanic walls. 5. Inflammatory exudates may be deposited in the labyrinth. 6. Mastoiditis occasionally occurs in adults, but is relatively more common in children. 7. It may terminate in chronic suppuration. 8. Death is a rare occurrence in acute suppurative otitis, though it may result from extension to the cranial cavity.

After discussing chronic suppurative otitis media and the manner in which it may produce conditions dangerous to life, Ballenger takes up the factors which enter into the question of prognosis:

- I. Facial paralysis, occurring during the course of chronic otorrhœa, is presumptive evidence of either necrosis of the post-superior wall of the tympanum, whereby the facial nerve is exposed, or of neuritis from inflammatory extension to the facial nerve through the osseous tissue surrounding it. In either event it is a serious complication and should be a bar to the issuance of a life insurance policy.
- 2. A history of recurrent attacks of pain and tenderness in the mastoid region are signs of chronic mastoiditis, and indicate a condition which is a constant menace to life.
- 3. The presence of aural polypi or granulation tissue indicates bone necrosis, retained secretions, and sometimes perforation into the cranial cavity. McEwen reports a case

in which there was perforation of the roof of the attic through which granulations projected into the middle ear. They were supposed to be aural polypi, the correct diagnosis only being made during a subsequent mastoid operation.

- 4. If there is a fetid odor it is probable that the secretions are retained and that latent mastoiditis is present. Mc-Bride has called attention to the fact that the odor may not be noticeable until a probe is introduced into the attic, or middle ear, when it becomes very pronounced. This procedure should be resorted to before passing upon the case. It should be borne in mind, however, that the odor may be due to the presence of certain nonpathogenic bacteria, in which case its significance is not so important. It is usually, however, a pretty safe guide as to the progress made in treatment.
- 5. Perforation of the membrana tensa in the post-superior quadrant is indicative of caries of the body of the incus. In such cases pus may be seen oozing from under the upper edge of the perforation. This should be looked upon with suspicion until it is cured by the removal of the incus and other offending material from the middle ear.
- 6. When the perforation is in Schrapnell's membrane, there is usually necrosis of the malleus or incus, or both; in some cases the attic walls are also necrosed. There is imminent danger in this condition, and it can only be averted by ossiculectomy. In some cases even this procedure is not sufficient, a radical tympano-mastoid operation being necessary.
- 7. When the perforation is elsewhere in the membrana tensa there is usually a much simpler pathologic process present, which will often yield to simple treatment.
- 8. If the applicant is poorly nourished, or affected with a marked diathetic state, the probability of cure under either surgical or nonsurgical treatment is small.
 - 9. A small amount of discharge, with or without odor, is

usually regarded as a favorable symptom, the danger of extension to the cranial cavity being almost nil. Ballenger does not accept this view. It is in just such cases that the vessels are most apt to become thrombosed. The local infection may be less virulent and the process of disintegration be attended by but slight signs. Herein lies the danger. If the disintegration were marked by pronounced inflammatory signs, medical and surgical aid would be sought and the danger averted. So-called mild chronic suppurations are often entirely overlooked by the patient and physicians, and in case of intracranial extension, is reported as one of primary meningitis. Too much stress cannot be laid upon this fact.

In the treatment of pyogenic diseases of the middle ear there are four cardinal principles to be observed, viz.: I. Asepsis. 2. Removal of morbid material. 3. Free drainage. 4. To check the progress of the morbid process.

- I. Asepsis may only be obtained where there is free drainage, and easy access to the parts affected. In simple cases this may be obtained where the perforation is large and located in the inferior portion of the drumhead. After thoroughly cleansing the parts the external meatus should be packed with sterilized gauze to maintain the asepsis. If the perforation is higher it will be necessary to enlarge it downward. If the ossicles are necrosed or buried in granulation tissue they should be removed to establish free access to the attic and antrum. Should cholesteatomatous or granulation tissue block the antrum and mastoid cells a radical tympanomastoid operation will be required to secure asepsis.
- 2. The removal of the morbid material may in simple cases be done through the external meatus. Polypi and granulations limited to the middle ear may be thus removed. If the ossicles are involved they may also be removed through this channel. If, however, the attic, antrum and mastoid walls are necrosed or filled with morbid material, it will be necessary to do a post-auricular operation. Cholesteato-

matous material, if limited to the middle ear cavity, can be removed through the external meatus, while if it has gained access to the attic, antrum, or mastoid cells, it will be necessary to do a post-auricular operation.

- 3. Free drainage is obtained in the same way as the removals of morbid materials are done, hence need not be repeated here. The importance of establishing free drainage cannot be overestimated. We are dealing with a pus-secreting cavity and must follow the same surgical principles laid down for chronic abscesses in other parts of the body. The bugbear of the procedure is the danger of injuring the facial nerve, and impairing the function of hearing. The gauze dressing applied to maintain asepsis also promotes free drainage. Bacteria grow most readily in pools of sero-mucus and pus, hence the necessity of applying the gauze dressing to absorb and carry it away as rapidly as it is formed.
- 4. The morbid process should be checked, otherwise the prognosis remains in doubt, and life insurance must be withheld. In simple middle ear disease with a large perforation of the drumhead this may be accomplished by local treatment alone. When the attic or antrum walls are necrosed, a post-auricular operation will be necessary.

Ballenger gives a classification of diseases of the ear in relation to life insurance, which he says is of necessity artificial and arbitrary, and should therefore be regarded as only suggestive.

The first table will include such cases as might be passed for life insurance if other conditions are favorable. The second table will include cases of moderate severity which should be carefully considered before either receiving or rejecting the applicant. The third table includes those cases which in the opinion of the writer should bar the applicant from life insurance until he is cured of the ear condition therein named.

First Class.—1. Eczema of auricle and external meatus. 2. Inspissated cerumen, if shown to be free from cholesteat-

omatous material and pus. 3. Benign neoplasms of the auricle. 4. Furuncles of the external meatus. 5. Dermatitis of the auricle and external meatus. If it is quite severe and attended by considerable pus discharge, it should be placed in the second class. 6. Otomycosis of external meatus and 7. Perforation of the drumhead, if low, and the drumhead. discharge is odorless and limited to the middle ear. 8. Calcareous deposits left in the drumhead after a cured suppurative inflammation. o. Chronic catarrhal otitis media if mild and progressing slowly. If it is progressing rapidly it should be in the second class. 10. Closure of the Eustachian tube from tubal catarrh. 11. Anemia of the labyrinth attended by slight dizziness, nausea, tinnitus and deafness; the general anemic condition should be shown to be a simple anemia of a nonprogressive type. 12. Toxic disturbances from quinia, salicylic acid, etc., as shown by slight tinnitus and 13. Hysterical disturbances of the auditory nerve. deafness. 14. Diplacusis.

Second Class.—I. Absence of cerumen with a shiny external meatus and drumhead, and rapidly increasing deafness.

2. Chronic middle ear catarrh with marked or rapidly increasing deafness.

3. Atrophic middle ear catarrh with marked or rapidly increasing deafness.

4. Cicatricial closure of the Eustachian tube.

5. Pronounced hyperemia of the labyrinth not due to tuberculosis, heart, lung, or kidney disease.

6. Ferforation of the membrana flaccida unattended by foul odor. The probe should be inserted into the perforation, as this odor may be concealed until thus disclosed.

Third Class.—1. Erysipelas of the auricle and meatus.
2. Phlegmon, gangrene, and ulcer of the auricle and meatus.
3. Subperiosteal abscess. 4. Perforation of the membrana flaccida, with odor. 5. Perforation of the membrana tensa in the post-superior quadrant. 6. Bulging post-superior wall of meatus. 7. Cholesteatoma of the middle ear, attic, antrum

or mastoid cells. 8. Chronic suppuration with recurrent pains over the mastoid. 9. Chronic suppuration with polypi and granulations in the middle ear. 10. Chronic suppuration with small perforation in the membrana tensa. Chronic suppuration with necrosis of the ossicles. 12. Chronic suppuration with necrosis of the tympanic walls. 13. Chronic suppuration with the membrana tympani entirely gone, and the ossicles buried in a mass of fibrous and granulation tissue at the floor of the attic. 14. Pinhole perforation at the margin of the drumhead. 15. Malignant disease of any part of the ear. 16. Tubercular disease of the ear. I7. Narrow external meatus following chronic suppuration. 18. Sclerosis attended by marked deafness and tinnitus. Neoplasms of the middle ear. 20. Hyperemia of the labyrinth attended by a rapid pulse may indicate tuberculosis, heart or kidney disease and should be looked upon with suspicion. 21. Hemorrhage into the labyrinth indicates caries of the petrous portion of the temporal bone, kidney or heart disease. 22. All pronounced labyrinthine inflammations, whether they are from extension of the middle ear disease, or from infection arising during the course of the exanthematous fevers, or from syphilis, belong to the third class. flammations and impairment of the auditory nerve from meningitis, cerebro-spinal meningitis, syphilis, or brain tumors.

NEW INSTRUMENTS AND APPLIANCES.

Intratympanic Masseur.—The instrument designed by W. H. Weaver of Chicago (1, Nov.) is composed essentially of a tube, fitting between the cut-off and the catheter, in which is placed a valve that cuts off the current once in each revolution. This valve is kept in motion by the impact of a small jet of air against a fan wheel attached to the stem of the valve. As constructed, it is capable of making from four to twenty revolutions, or air puffs per second.

Weaver says: The advantages of intratympanic treatment over treatment external to the membrana tympani are obvious. The instrument will give the best results in cases of tympanic disease where there is the least amount of Eustachian irritability.

This instrument produces a rapid vibratory massage of the tissues of the middle ear, which is probably transmitted in part to the labyrinth. The massaging effect can easily be recognized by both the patient and the operator. It can be tolerated by the patient from two to ten times longer than ordinary Politzerization, producing a rather agreeable sensation, relieving soreness rather than producing it. Tinnitus aurium is rapidly relieved in all the cases in which it has been used, and the hearing power more rapidly improved in comparison with the ordinary methods of treatment.

The instrument is intended for use with about twenty to thirty-five pounds of air pressure, depending somewhat on the ease with which the air passes through the Eustachian tube, and that largely on the expert handling of the Eustachian catheter.

C. L. Enslee of Chicago (1, Nov., '98) has devised an electrical apparatus for heating and sterilizing compressed air. The air for the receiver is made to pass through the electric heater, thence to the vaporizer, spray apparatus or inflater.

The principal object for which the apparatus was designed is the treatment of chronic otitis media.

Of the use of the apparatus its designer says:

Heat stimulates the vessels, restores normal circulation, promotes absorption of medicated oils, making them more effective, relaxes the ossicular ligaments and muscular fibers of the membrana tympani; thereby restoring them more nearly to their normal condition. It also sterilizes the air and destroys micro-organisms.

Tinnitus aurium is always increased by cold. Heat

softens bands of adhesions, and any ankylosis that may exist, so that hot air forced through the Eustachian canal into the middle ear gradually restores the elasticity and removes the pressure from the fenestra ovalis, which frequently causes the tinnitus. I have treated over five hundred cases with gratifying results. The air can be heated to any desired degree, and the force regulated with Dr. S. S. Bishop's air meter or regulator. From the receiver the hot, sterilized air is filtered and conveyed through a rubber tube to the patient. It is designed to take the place of cold air, so long in use. The apparatus can be used in connection with any oil vaporizer in the treatment of catarrh and bronchial diseases. I am confident of wonderful results from this new form of compressed air in the treatment of pulmonary phthisis.

Frank C. Todd of Minneapolis (7, Oct. 14) has devised an aseptible syringe point for use with a fountain syringe.

He very justly condemns the piston syringes as ordinarily used for disinfecting purposes. Drawing fluid into a syringe after the point has been in contact with an infected ear is sure to infect the syringe. In order to prove the correctness of this statement Todd made cultures from the points and interiors of several piston syringes and demonstrated the presence of various bacteria, including staphylococcus pyogenes aureus, and a!bus, streptococcus pyogenes and bacillus tuberculosis.

Kugel (11, Oct. 8, '98) has designed an ear trumpet shaped like the ear of a horse. This shape obviates the annoying resonance of the ordinary trumpet. The tube may be detached and the receiver applied directly to the ear.

Amburg of Detroit (160, March) describes a new hearing apparatus which he has devised. The receiver is about fourteen inches in length and perhaps half that in width. His plan is for the patient to hold the instrument in the lap. There is a tube leading from the tapering end of the receiver to the ear. It is expected that the large size of the receiver

will enable the patient to hear the distant sounds of church service, etc.

C. H. Burnett (7, June 3) describes a modification of Siegle's otoscope. This instrument is practically a Gruber speculum, made of metal, to which is fitted a glazed lid that transforms it into the Siegle pneumatic speculum. It is nickel-plated, both within and without. There are two small openings on its inner wall, at the point connecting it with the air tube, which act as a sieve to prevent the drawing up of particles of cerumen or dirt into the mouth of the operator.

LIST OF PERIODICALS.

			_
I.	Laryngoscope. St. Louis.	38.	Medical Council.
2.	Jour. of Laryngol., Rhinol.,	39.	Western Med. Review.
	Otol. London.	40.	Kansas City Med. Journal.
3.	Ann. of Otol., Rhinol. and Lar-	41.	Scottish Med. and Surg. Jour.
J.	yngol. St. Louis.	42.	Medical Age. Detroit.
4.	Jour. Eye, Ear and Throat	43.	Journal des Praticiens. Paris.
Ψ.	Diseases. Baltimore.	44.	Louisville Med. Monthly.
5 2	nd 51/2. Archiv. für Rhinol. u.	45∙	Atlanta Med. and Surg. Jour.
5 -	Laryngol. Berlin.	46.	Charlotte Med. Jour.
6.	New York Med. Journal.	47.	Birmingham Med. Review.
7.	Journ. Am. Med. Asso. Chi-	48.	Cincinnati Lancet-Clinic.
7.	cago.	49.	New Orleans Med. and Surg.
8.	Lancet. London.		Jour.
g.	Brit. Med. Journal. London.	50.	Medical Bulletin. Philadelphia.
۳n a	nd 12. Rev. Internat. de Rhinol.,	51.	L'Union med. du Canada. Montreal.
10 4	Otol., Laryngol. Paris.	=0	L'Echo med. du Nord.
II.	Rev. hebdom de Laryngol.	52.	Virginia Med. Semi-Monthly.
13.	Müchener medicin. Woch.	53.	Richmond.
14.	Wiener klinische Wochen-	54.	Petersburgh med. Woch.
14.	schrift.	5 4 .	Archiv. f. klin. Chirurg. Ber-
15.	Wiener klinische Rundschau.	33.	lin.
16.	Therapeutic Gazette. Detroit.	56.	Canadian Jour. of Med. and
17.	Philadelphia Med. Journal.	50.	Surg. Montreal.
18.	Deutsche med. Wochenschrift.	5 7 .	Maritime Med. News. Halifax.
	Leipzig.	58.	Montreal Med. Journal.
19.	Monat. für Ohrenheil. Berlin.	59.	Physician and Surgeon. Ann
20.	Deutsche Praxis.		Arbor.
21.	Zeitschrift f. Krankenpflege.	60.	Guy's Hospital Reports, 1896.
	Bern.	61.	Australasian Med. Gazette.
22.	Vratch. Warsaw.	_	_ Sidney.
23.	Pacific Med. Journal. San	62.	Bollettino. Florence.
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24.	Kansas Med. Journal. Topeka.	٠.	Naples.
25.	Canadian Med. Review. To-	64.	Riforma Medica. Naples.
- (ronto.	65.	Baltimore Med. Jour.
2 6.	Brooklyn Med. Journal.	66.	Louisville Med. Jour.
27. 28.	Philadelphia Policlinic. Clinique. Chicago.	67. 68.	Clinical Journal. London. Medical Record. New York.
	Yale Med. Journal. New Ha-	69.	Canadian Practitioner. To-
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30.	Memphis Med. Monthly .	70.	Medical News. New York.
31.	American MedSurg. Bulletin.	7I.	Internat. Jour. of Surg. New
J	New York.	,	York.
32.	International Med. Magazine.	72.	Maryland Med. Jour. Balti-
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33.	Medical Review of Reviews.	73.	Texas Med. News. Austin.
-	New York.	74.	Tennessee Med. Jour.
34.	Medical Times and Register.	75.	Revue med. Paris.
35.	Canadian Lancet. Toronto.	7Ğ.	La Polyclinique. Brussels.
<u>3</u> 6.	New England Med. Monthly.	77.	Semaine méd. Paris.
	Bridgeport, Conn.	78.	Wiener med. Woch.
37.	Medical Summary. Philadel-	79.	Zeitschrift f. Prakt. Aerzte.
	phia. 257		Leipzig.

8 0.	Berlin klin. Woch.	122.	Beitrage zur klin. Chirurg.
81.	Archiv. Internat. de Laryng. Paris.	123.	Tübingen. Am. Jour. Med. Sciences.
82.	Presse méd. Paris.		Philadelphia.
83.	American Med. Quarterly. New York.	124.	Deutsche Zeitsch. f. Chirurg. Leipzig.
84.	Pacific Record of Med. and	125.	Leipzig. Medical Times. Philadelphia.
·	Surg. San Francisco.	126.	Ann. des Mal. de l'Or, etc.
85.	Merck's Archives. New York.		Paris.
86.	St. Paul Med. Jour.	127.	Frankel's Arch.
87.	Chicago Clinic.	128.	Archives of Otology. New
88.	Medical Monograph. Topeka.	120.	York.
89.	Post-Graduate. New York.	129.	Centrablat. f. innere Med.
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90.		7.20	Heb. de Laryngol., d'Otol. et
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91.	Denver Med. Times.		de Rhin.
92.	Glasgow Med Jour.	131.	Medical Brief. St. Louis.
93.	Medical Herald. Louisville.	132.	Journal of Tuberculosis.
94.	Canadian Pract, and Rev.	133.	Northwestern Lancet. St. Paul.
95.	Edinburgh Med. Jour.	134.	Cleveland Med. Jour.
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97.	Southern California Pract. Los		Otol Society.
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98.	Memphis Med. Jour.	138.	Jour. de Med. de Paris.
99.	Pennsylvania Med. Jour.	139.	Internat. Centralb. f. Laryng.,
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	ville.	140.	Rev. Méd. Montreal.
101.	Memphis Lancet.	141.	Monthly Cycl. of Pract. Med.
102.	Revue Gen. de Path. Internat.	- •	Philadelphia.
103.	Annals of Surgery. Philadel-	142.	Medicine. Detroit.
5.	phia.	143.	Southern Clinic. Richmond.
104.	Alkaloidal Clinic. Chicago.	144.	Gaillard's Med. Jour.
105.	Medical Review. St. Louis.	145.	Interstate Med. Journal.
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113.	National Med. Review. Wash-	156.	Trans. American Otolog. Soc.
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114.	Western Med. Jour. Ft. Scott.	159.	University Med. Magazine.
115.	Kingston Med. Quarterly.	0,	Phila.
11Ğ.	Southwestern Med. Record.	160.	Physicians and Surgeons. De-
117.	Medical Fortnightly. St. Louis.		troit.
118.	Practitioner. London.	162.	Therapeutische Monat. Ber-
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